S
026.61
M12RMBM
1992

Report on Montana's Bio-Medical Information Distribution System

Prepared for

The Governor's Task Force on

Bio-Medical Information

STATE DOCUMENTS COLLECTION

DEC 23 2003

MONTANA STATE LIBRARY
1515 E. 6th AVE.
HELENA, MONTANA 59620

Blackened area represents counties in the State of Montana where there is no librarian or Docline.

Prepared by:

Dianne Runnestrand
September, 1992

MONTANA STATE LIBRARY
3 0864 1002 4387 5

But now take the art of medicine itself. Has that any defects or weaknesses? Or, is it not true that no art needs to have its weaknesses remedied or its interests studied either by another art or by itself, because no art has itself any weakness or fault, and the only interest it is required to serve is that of its subject-matter? In itself, an art is sound and flawless, so long as it is entirely true to its own nature as an art in the strictest sense---and it is the strict sense that I want you to keep in view. Is not that true?

So it appears.

Then, said I, the art of medicine does not study its own interest, but the needs of the body, just as a groom shows his skill by caring for horses, not for the art of grooming. And so every art seeks, not its own advantage---for it has no deficiencies---but the interest of the subject on which it is exercised.

It appears so.

But surely, Thrasymachus, every art has authority and superior power over its subject.

To this he agreed, though very reluctantly.

So far as arts are concerned, then, no art ever studies or enjoins the interest of the superior or stronger party, but always that of the weaker over which it has authority.

Thrasymachus assented to this at last, though he tried to put up a fight. I then went on:

So the physician, as such, studies only the patient's interest, not his own. For as we agreed the business of the physician, in the strict sense, is not to make money for himself, but to exercise his power over the patient's body; and the ship's captain, again, considered strictly as no mere sailor, but in command of the crew, will study and enjoin the interest of his subordinates, not his own.

He agreed reluctantly.

And so with government of any kind: no ruler, in so far as he is acting as ruler, will study or enjoin what is for his own interest. All that he says and does will be said and done with a view to what is good and proper for the subject for whom he practices his art.

Plato
(ca. 427-347 B.C.)

TABLE OF CONTENTS

I. EXECUTIVE SUMMARY 3

II. INTRODUCTION 5

III. OBJECTIVE 1: REVIEW THE BIO-MEDICAL INFORMATION SERVICE PATTERNS SINCE THE END OF MONTANA HEALTH SCIENCES INFORMATION NETWORK (MHSIN) IN 1985. 7
A. TREND 1. THE DOCUMENTED IMPACT OF BIO-MEDICAL INFORMATION ON THE COST/QUALITY RATIO. 8
1. The National Experience 8
2. The Montana Experience. 10
B. TREND 2. THE DISTRIBUTION OF BIO-MEDICAL INFORMATION THROUGH CONTINUING EDUCATION (CE) AND PRACTICE SPECIFIC ANALYSIS. 12
1. The National Experience. 12
2. The Montana Experience. 16
C. TREND 3. A REVIEW OF THE LITERATURE REPORTING DIMINISHING RESOURCES AND STANDARDS FOR MEDICAL LIBRARIES. 19
1. The National Experience. 19
2. The Montana Experience. 20
D. TREND 4. A REVIEW OF THE LITERATURE REGARDING THE END-USER'S DIRECT ACCESS TO MEDICAL INDEXES, ARTICLE ABSTRACTS, AND INFORMATION DELIVERY. . . . 21
1. The National 21
2. The Montana Experience 24

IV. OBJECTIVE 2: IDENTIFY THE STRENGTHS AND RESOURCES OF THE CURRENT BIO-MEDICAL INFORMATION SYSTEM. 25

V. OBJECTIVE 3. IDENTIFY PROBLEMS WITH AND PROVIDE SOLUTIONS FOR THE IMPROVEMENT OF A STATEWIDE INFORMATION SYSTEM. 27

VI. OBJECTIVE 4. DEVELOP A LIST OF FUNDING SUGGESTIONS, A FUNDING RECOMMENDATION, THE NEXT STEPS, AND A METHOD OF SYSTEM EVALUATION. 41
A. FUNDING OPTIONS 41
1. MANDATE 41
2. COMPETE 43
3. DEMONSTRATION 44
B. FUNDING RECOMMENDATION 46
C. NEXT STEPS 48
D. METHODS OF EVALUATION 50

VII. CONCLUSION 52

VIII. REFERENCES 53

IX. EXHIBITS 53

A. Bio-Medical Information Task Force Members
B. Impact Of Information From The Hospital Library On Clinical Decision Making: Changes Reported By Physician
C. Physician's Response To Clinical Pharmacist's Suggested Practice Changes.
D. Physician CME Requirements By State
E. Specialty Boards' Recertification Requirements
F. AMA Continuing Education Program
G. State Boards of Nursing and RN Licensure Requirements
H. Techniques for the Laboratory Method in Nursing
I. Montana Health Care License Professionals
J. Montana Health Sciences Information Network Objectives
K. Grateful Med Outreach Project Statistics by Profession
L. Masters Prepared Librarians
M. Librarians Willing To Do Services for Other Organizations
Mc. Montana Counties Not Served by Docline
N. Organizations With Docline
O. Continuing Education Product Description
P. Basic Information Services
Q. Recommended Job Duties for the Coordinator

I. EXECUTIVE SUMMARY

There are two theoretical models for bio-medical distribution. The first model requires the health practitioner to pick up the phone, or drop by the library, and ask for information. This model requires an active practitioner and a passive librarian. The second theoretical model of distribution provides information to all health practitioners, even passive ones. This model recognizes that bio-medical information is critical to quality patient care and doesn't wait for a practitioner's request.

The bio-medical information distribution system in Montana is primarily of the first model. The recipients of Montana's system are primarily physicians who initiate a request. Non-requesting physicians (reported to be 45% (Flaherty,1989) and non-physician health professionals (over 15,000), remain virtually untouched by the current bio-medical information system.

The inadequacy of the current distribution system is recognized by many, including the National Library of Medicine; the concept of end-user searching a hopeful solution. The end-user distribution system is an unsuccessful strategy for health practitioners because it requires even more activity from the health professional than the traditional distribution model of mediated searches (calling the librarian). End-user searching does not and will not reach the

passive health practitioner. In fact, relying on end-user searching as a distribution model makes a marginally effective distribution system, ineffective.

This report recommends that Montana develop an information distribution system that reaches all licensed health professionals. This report argues that an effective distribution system can be developed through continuing education. The recommended distribution system provides the following services;

1. A review of the practitioner's practice data with relevant scientific literature provided,
2. A monthly or quarterly table of contents review of selected journals,
3. On-going information provided on specified subject areas,
4. Routine literature searches as requested, and
5. A review of the practitioner's personal library with recommendations for cataloging, methods of collection, additions, and deletions.

This distribution system is called practice-specific continuing education, is self-financing, and proven to be effective. This method of education is recommended by the American Medical Association and the National Council of State Boards of Nursing.

This report recommends that the overseers of this educational effort be an organization representing the health consumer,

educator, and practitioner, and that this organization contract with Montana's universities, colleges, and technical programs to implement practice-specific continuing education. This model of information distribution will reach all licensed health professionals, whether the professional be active or passive, nurse or physician, urban or rural. It is a practice-specific information distribution system that will connect health practice with health educators and researchers. This report argues that it is this system that will provide optimum benefits for the health consumer.

II. INTRODUCTION

Why are we concerned about the distribution of bio-medical information? I believe that our concern stems from the belief that health professionals must be apprised of advances in clinical practice such that the information appropriately effects patient care. It is my impression that we do care whether packed cells are used instead of whole blood; if fourth generation antibiotics are used instead of first, second, or third; if EMT's in rural Montana use mast pants or not; or whether hypothermic patients are warmed slowly or quickly. Bio-medical information that is continually growing and changing supports the thousands of decisions that health professionals make every day. The people of Montana depend on their health professionals keeping in touch.

It is our caring and the importance of the information that creates this Task Force and breathes life into the question, "What is the best way to distribute bio-medical information to Montana's health professionals?" With this common focus the members of the Task Force (see Exhibit A) can proceed with enthusiasm toward the design of a bio-medical information distribution system that reaches all licensed health professionals. The Task Force must not be distracted with incidental concerns; such as how to run a hospital library. Though hospital libraries are the central component of the current bio-medical distribution system, this report is not about hospital libraries. Rather, this report is about the distribution of bio-medical information to health practitioners such that it appropriately changes their clinical behavior.

The four objectives defined by the Task Force prescribe the format of this report and assure that Task Force members and others base their health care policy decisions on a review of the knowledge available. These objectives are:

OBJECTIVE 1. Review the bio-medical information service patterns since the end of Montana Health Sciences Information Network (MHSIN) in 1985.

OBJECTIVE 2. Identify the strengths and resources of the current bio-medical distribution system.

OBJECTIVE 3. Identify problems and provide solutions for the improvement of a statewide system.

OBJECTIVE 4. Develop a list of funding suggestions, a funding recommendation, the next steps, and a method of system evaluation.

I would like to thank the Task Force members who generously gave of their time and expertise to help develop this report. Montana's Regional Medical librarians in Seattle, the Montana State librarians, and Suzie Holt all provided valuable support in identifying and acquiring statistics and scientific literature. Because of the commonality of their shared goals and financial support, the Montana Area Health Education Center (MAHEC) and the National Network of Libraries of Medicine (NN/LM), deserve special recognition and appreciation.

III. OBJECTIVE 1: REVIEW THE BIO-MEDICAL INFORMATION SERVICE PATTERNS SINCE THE END OF MONTANA HEALTH SCIENCES INFORMATION NETWORK (MHSIN) IN 1985.

Four trends affecting bio-medical information services are identified from a review of the scientific literature. These trends are:

1. A trend that documents the impact of bio-medical literature on the cost/quality ratio.

2. A trend focusing continuing education requirements toward practice-specific reviews.

3. A trend reporting diminishing standards and resources for hospital libraries.

4. A trend toward supporting end-user literature search and retrieval.

A. TREND 1. THE DOCUMENTED IMPACT OF BIO-MEDICAL INFORMATION ON THE COST/QUALITY RATIO.

1. The National Experience

A demonstration of the effect the review of scientific literature has on physician behavior, patient care costs, and quality is documented in a Rochester, N.Y. study. In this study 448 physicians from 15 participating hospitals are asked to request some information on a current clinical case (Marshall,1991). Of the 208 Physicians returning questionnaires, 80% of the responding physicians report the information changed their patient

care. Exhibit B presents the data regarding physician responses from the Rochester study.

The value of scientific literature and its ability to change practitioner behavior and effect the cost/quality ratio is also recognized in the health care management literature. The management paradigm known as total quality management (TQM), or sometimes called continuous quality improvement (CQI), provides a conceptual framework for general systematic improvement. The Joint Commission on the Accreditation of Hospitals (JCAHO) now believes, as do all students of CQI/TQM, that the search for quality health care is better served by increasing the capability of the medical system as a whole rather than concentrating on a few deficient providers (Laffel,1992). Indeed, it is with JCAHO's "Agenda for Change" that self-assessment and introspection, not inspection, are recognized as the keys to effecting change. JCAHO now mandates that all health professionals participate in the CQI/TQM process. This process must always begin with an investigation of the current scientific literature.

JCAHO's Agenda for Change promises to bring interesting challenges for the medical librarian. "Hospital Librarians have a significant role to play in the

continuous quality improvement process. Hospital librarians are the key ingredient in effectively providing current literature, defined by the JCAHO as literature on "clinical and management processes, medical ethics, and the impact of patient care cultural systems upon health care management and the quality of care" (Jones,1991)."

Even though CQI/TQM arrived on the health care scene less than five years ago, the numbers of health care organizations using this approach has grown at a very fast pace (Kritchevasky,1991; Berwick, 1991). This growth is in part due to JCAHO's Agenda for Change, which has as it's goal to institutionalize the fundamentals of CQI/TQM in JCAHO hospitals by 1994.

2. The Montana Experience.

The implementation of JCAHO'S Agenda for Change is too recent for an assessment of its impact on Montana's hospitals. Twenty-one of Montana's 62 hospitals (34%) report JCAHO accreditation (AHA,1992). It can be expected that these hospitals will implement the JCAHO Agenda For Change and incorporate CQI/TQM philosophies

into their management practices shortly after the JCAHO requirements become fully implemented in 1994.

A Montana study reports the significant effects that specific recommendations and scientific information can have on physician behavior. Dr. Cress, a clinical pharmacist in Helena, Montana, reports that the review of 296 drug levels resulted in 161 specific recommendations (61%). Of the 161 recommendations, physicians accepted the recommendation 129 times (80%), as evidenced by a changed patient order complying with the clinical pharmacist's recommendation(Cress, 1991). Dr. Cress documents similar success in changing physician behavior with reviews focusing on antibiotics (87.5% compliance), the use of piggyback medications (76.47% compliance), drug duplication (95.16% compliance), and drug dosing (56.9% compliance). See Exhibit C for the details of this study.

Unfortunately, a review of the literature does not provide any studies reflecting the effect that bio-medical information has on the behavior of Montana nurses or allied health professionals.

B. TREND 2. THE DISTRIBUTION OF BIO-MEDICAL INFORMATION THROUGH CONTINUING EDUCATION (CE) AND PRACTICE SPECIFIC ANALYSIS.

1. The National Experience.

Researchers from the University of Washington report that the number of hours a practitioner spends at a variety of continuing medical education activities do not effect performance on the American Board Of Internal Medicine recertification exam. Ramsey et al report that the only CME activity that correlates with recertification success is the number of hours spent in informal continuing education, reading journals ($r=.20, P<.05$). This study reports that examination performance is not related to university affiliation versus private practice, rural versus urban location, or volume of practice. This study also finds that "The likelihood of passing the examination declines in relationship to the number of years since initial certification...and that changes in knowledge over time are related less to a decline in cognitive ability...than to insufficient acquisition of new knowledge after training is completed."(Ramsey, 1991).

Others also insist that it is misguided to assume that facts learned at traditional continuing education impact practice behavior. Manning argues for a change in CME focus when he says:

> "The facts that are learned through general reading and attendance at conferences may not be applied for weeks, months, or years. For example, a lecture on infective endocarditis may orient attendees to the currently accepted methods of diagnosis and therapy, but the average physician may see a patient with infected endocarditis once in three to five years. Thus the information learned from the lecture must be supplemented by more specific information at the time a patient with infective endocarditis consults the physician (Manning, 1987)."

Timeliness of information, the human capabilities for recall, the group vs. individual focus of the information, and the passive nature of the learning, all undermine the efficacy of traditional CE.

Educators and researchers are defining new ways to increase the effectiveness of continuing education. A team of investigators at the University of Southern California describe a program which incorporates library services into continuing medical education for physicians. Each of the physicians received 2.5 hours of continuing education credit from the California Medical Association for each month of participation (Clintworth, 1979).

Various methods for identifying specific information needs of physician are recommended. Clintworth uses a systematic review of prescribing patterns to identify practitioner's actual needs. Other investigators report the use of peer review findings to identify practitioner's actual needs (Jones,1991). The use of traditional billing and utilization review data is also recommended (Manning,1990).

Christiane J. Jones, the chair of the Standards Committee for the Medical Library Association, provides strategic insight into the foundations of these various programs when she recognizes that "These programs are similar to a clinical librarian program, but provided at a different point in the health care process (Jones,1991)." Ms. Jones seems to agree with Manning's call for "medical librarians to focus on an individual's practice to identify knowledge deficits and to provide information responses that are more precise and specific (Manning, 1987)."

The American Medical Association reports that 21 states currently require CME for licensure (see Exhibit D), and that 16 of the 23 medical specialty boards require a recertification written exam (AMA,1990). See Exhibit E.

The AMA also charts a direction for continuing education in its 1990 statement to the Ways and Means Health Committee of the United States House of Representatives. In this report the AMA recognizes a need for states to provide systematic continuing education for physicians not board certified or subject to hospital peer review. The AMA recommends that these physicians receive a systematic educational review of their practice using an approach that is very similar to the practice-specific review and literature distribution method recommended by Manning, Clintworth, and others. See Exhibit F. The AMA is piloting their project in conjunction with the State of Oregon and believes that "This project, refined and enlarged...will allow physicians to educate themselves on methods of improving the quality of the medical services offered in their practice."

The 1991 American Journal of Nursing Guide reports that 27 of the 52 states require some continuing medical education. See Exhibit G for this listing. An indication of nursing's support for continuing education is the 1991 statement of the National Council of State Boards of Nursing. In this document entitled "Conceptual Framework For Continued Competence" the National Council concludes; "The assurance of continued competence is a complex process that must be based on the accepted

standards of nursing practice that are relevant to the practice area of the individual nurse."

This position is not at all surprising, as the very fundamentals of nursing require that all interventions be based on the individual's needs, whether the individual be the patient or the practitioner. The fundamentals of this belief are summarized in a 1972 nursing text entitled Creative Teaching In Clinical Nursing (Schweer,1972). See Exhibit H for this summary. It is interesting to note that the first step for the student in this process is to "study necessary background material in accord with outlined objectives." This is just one more example how all health professionals insist on a review of the literature at the beginning of any serious educational effort.

2. The Montana Experience.

Montana's approach to continuing education is inconsistent. Currently Montana licenses 15 health professions, 11 of the professions require continuing education and 4 do not. The 4 professions that do not require CE license requirements are physicians, nurses, radiologic technicians, and occupational therapists.

These four professions represent 73% of the licensed medical professionals in the state. See Exhibit I for a listing of licensed health professionals, their CE requirements, and their constituencies. This finding does not mean that nurses, physicians, occupational therapists, and radiologic technicians do not partake of CE. Their own professional organizations and their place of employment or practice may require CE for continued membership or employment. This finding merely reflects that CE credits are not being used in the licensing decisions.

According to the AMA it is important to identify physicians that are not board certified or participating in peer review activities at a hospital. The 1989 Montana AHEC study reports that 79.8% of the 392 responding physicians (31% response rate) are board certified (Flaherty, 1989). Physicians not associated with hospital peer review activities can be estimated by an analysis of the number of physicians on staff at non-JCAHO hospital. From information provided by the Montana Hospital Association and by the Pacific Northwest Regional Health Sciences Library Service's (PNRHSLS) 1990 statistics, it is possible to estimate that 1115 physicians (41%) are currently on the medical staffs of the 22 JCAHO Montana hospitals. The Montana Department

of Commerce reports 2724 active physician licenses, thus making it possible to estimate that 1609 physicians (59%) are not associated with JCAHO hospitals.

Though Montana does not currently require continuing education for nursing relicensure, in February of this year a task force from the Board of Nursing did draft a recommendation to require nurses to submit certification of annual participation in 15 hours of continuing education. The Board will not recommend legislative changes for this year because of concerns raised by the Montana Nurses Association (MNA) and others. The MNA objects to the idea of certifying competency because they correctly believe that competency certification is beyond the scope of any board.

Clearly, the recognition of the relationship between biomedical information and continuing education is not a new concept to Montana's health professionals; nor is it a new concept to Montana's librarians. In 1980 one of the MHSIN's 19 objectives is "To specifically address the potential of the MHSIN to assist health providers in the attainment of quality continuing education (McClain,1980)." Twelve years latter, this objective remains unmet.

C. TREND 3. A REVIEW OF THE LITERATURE REPORTING DIMINISHING RESOURCES AND STANDARDS FOR MEDICAL LIBRARIES.

1. The National Experience.

The 1986 change in federal regulations eliminates the requirement for hospitals to maintain a medical library. This change has brought spirited responses from health professionals. Representative of those responses is the comment from Peter B. Farnsworth, M.D., Director of Scientific and Educational Activities of the Medical Society of the State of New York. He refers to the elimination of the requirements for medical libraries in hospitals as a perverse experiment to obtain data showing that lack of hospital libraries does indeed impact adversely on the quality of patient care (Groen,1990)."

Others continue to respond to the Medicare changes by surveying hospitals to determine any fluctuations in library services or resources. The results of a Southern California study showed a drop of approximately one full-time salaried equivalent per library and a decrease in libraries managed by a masters prepared librarian (Glitz,1992). A study by the Chicago based Medical

Library Association notes that 65% of the libraries cited major negative changes. Of those libraries 37% report budget cuts and layoffs, 18% report a general reorganization, 6% report downsizing, and 4% report budget and hiring freezes (Augustave,1990).

2. The Montana Experience.

Montana's hospital library statistics do not show a decline in library services for those hospitals with libraries participating in the Pacific Northwest Regional Health Sciences Library Service's (PNRHSLS) statistical surveys from 1985 through 1990. These statistics report that hospitals with libraries have experienced an 88% increase in budgeted dollars, a 42.8% increase in full time employees, and a 25% increase in journal holdings.

Hospitals without libraries participating in this same survey do not report such increases. Survey participation of these non-library hospitals decreased from 51% in 1985 to 32% in 1990. Reported expenditures also declined from $1700/hospital in 1985 to $1200/hospital in 1990. These hospitals do report one area of increase; the percentage of hospitals reporting expenditures for interlibrary loan services increased from 21% in 1985 to 73% in 1990.

One clear indication of diminishing Montana resources for bio-medical information is the reduction in state coordination efforts. The Terminal Report submitted by the Montana Health Sciences Library, Montana State University, reports significant progress toward meeting the 19 objectives defined for the Montana Health Sciences Information Network (MHSIN). These objectives are provided in Exhibit J. In reviewing these objectives it is clear that many of the needs identified by the objectives disappeared during the NLM grant funding period from 1980 through 1983 (Alldredge,1984). A review of these objectives from the perspective of 1992 reveals that most of the bio-medical information system needs, at one time identified and solved by MHSIN, are no longer being addressed.

D. TREND 4. A REVIEW OF THE LITERATURE REGARDING THE END-USER'S DIRECT ACCESS TO MEDICAL INDEXES, ARTICLE ABSTRACTS, AND INFORMATION DELIVERY.

1. The National Experience.

This trend began with the 1965 President's Commission on Heart Disease, Cancer, and Stroke. The Chairman of the

Commission, Dr. Michael DeBakey, points the direction for the next three decades of development with his recommendation to the President of the United States.

> "The concept of ready access to a comprehensive store of recorded knowledge has for centuries tantalized the scholar and investigator. To achieve fingertip control of the literature, of all that is known about the causes, treatment, and prevention of heart disease, cancer, and stroke, and to make this knowledge available to researchers, educators, and practitioners, is an objective to which this subcommittee wholeheartedly subscribes (President's Commission,1965)."

From this vision the Commission recommends that the National Library of Medicine play an instrumental role in increasing the effectiveness of the medical library service throughout the Nation. The goal of "finger-tip" access is responsible for the development of many technologies. Foremost among them is the MEDLARS/MEDLINE* network of computerized databases containing more than ten million references to the world's biomedical literature. Today the NLM maintains electronic databases such as AVLINE*, BIOETHICSLINE*, CANCERLIT*, CATLINE*, CHEMLINE*, HISTLINE*, and TOXLINE* to name just a few. These bases combine with the capabilities of LONESOME DOC*, an electronic literature delivery system, and the outreach training programs to

---

* Trademarks of the National Library of Medicine.

create an enormously successful network (NLM Long Range Plan,1989).

In their 1989 Long Range Plan the National Library of Medicine (NLM) recognizes that "though a strong library network has been built, many health professionals, perhaps the majority, are not being reached by this network." The first challenge that NLM articulates in its Long Range Plan is the incorporation of the individual health practitioner within the institutional network. An NLM priority is the support of end-user training grants, research projects, and product development.

The Health Sciences Information Center of Cedars-Sinai Medical Center in Los Angeles, California, reports that after one year of offering weekly training sessions on end-user searching, only 62 searches were done by an attending staff of over 2100 physicians (Soben,1988). Researchers at the University of Toronto report that general practitioners are less likely to perform searches than other physicians, and that the time a physician spends at the practice of medicine correlates negatively with successful end-user searching ($r=-.25, P<.01$) (Marshall,1989). These findings, coupled with the findings of a Pennsylvania study that reports rural

physicians see 22% more patients than their urban counterparts (McNabb,1985), speak pessimistically for the success of end-user searches.

The literature documents several characteristics of end-users that seem to foster successful and active computer searches. Medical students, residents, and medical researchers have all been reported as successful implementors of end-user strategies (Marshall, 1989; Green, 1988; and Soben,1988). Other researchers report that end-user success is high for frequent searchers performing simple searches (Walker, 1991; Salisbury,1990).

Technologies such as CD-ROM are also available to the end-user. Customized CD-ROM discs with literature specific to the individual practitioner's may prove a cost effective method of distributing bio-medical information. Getting the right information on the disc, organized in a manner most useful to the individual practitioner, is the challenge (Dalrymple,1990).

2. The Montana Experience

Through an NLM grant supporting Montana's Grateful Med Outreach Project, Ms. Holt concludes that the result of her efforts at end-user training was "awareness, but not necessarily understanding... access, but not particularly effective and independent utilization." Ms. Holt reports that none of the participating physicians became active searchers, even after individual follow-up training sessions at their site. In her report Ms. Holt "urges the NLM to fund and evaluate additional alternative approaches to the problem (Holt,1992)."

Ms. Holt's experience with training non-physicians compared to physicians is presented in Exhibit K. Ms. Holt reports that only 19% of the nurses requested passwords after receiving training; this compares to 50% of the physicians and 41% of the other health professionals. Ms. Holt reports that 100% of the administrators receiving training made requests for passwords.

IV. OBJECTIVE 2: IDENTIFY THE STRENGTHS AND RESOURCES OF THE CURRENT BIO-MEDICAL INFORMATION SYSTEM.

Strength 1. Montana is fortunate to have 9 Masters prepared librarians supporting it's network. The distribution of these librarians throughout our state is shown on the map provided in Exhibit L.

Strength 2. The Montana librarians and their supporting organizations are willing to provide library services to any health professional requesting service. The location of the 13 libraries that have indicated this willingness are displayed on the Montana map in Exhibit M.

Strength 3. Montana has established a positive relationship with the University of Washington through the WAMI Program and the Regional Medical Library located at the Health Sciences Library of the University of Washington.

Strength 4. The Montana Area Health Education Center is well regarded, and has professional education as its mission.

Strength 5. AHEC has established HEALTHCON, an electronic information resource for Montana Health Professionals.

Strength 6. The State Library provides literature searches and other services, (copying, article delivery, fax) at no charge.

Strength 7. The NLM DOCLINE* service is available in 19 locations statewide. Exhibit N displays these locations.

Strength 8. Montana's technical programs, colleges, and universities provide degree programs for 9 of the 15 licensed health professions, representing 76% of the licensed professionals in the state.

V. OBJECTIVE 3. IDENTIFY PROBLEMS WITH AND PROVIDE SOLUTIONS FOR THE IMPROVEMENT OF A STATEWIDE INFORMATION SYSTEM.

PROBLEM 1. The current bio-medical distribution system reaches approximately 55% of Montana's physicians and reaches even fewer non-physician professionals.

SUPPORTING EVIDENCE

* The Montana Area Health Education Council's study on "How Physician's Acquire Information" reports that 75% of the 392 MD respondents (31% response rate) have access to an organized library through their hospital or clinic; however, 81% percent report that they request 2 or less article reprints per month and 44.9% indicate that they never request a reprint. In that same survey 82.9% of the physicians report reading library journals less than

2 hours per month; 85% report accessing the library only occasionally or never for journals or textbooks; and 90% say that they occasionally or never conduct computer searches through the library. This same study reports that 83% of the physicians report using their personal journals frequently. Fifteen percent of the physicians report reading personal journals 3 hours or less a month while 52% report reading between 4 and 10 hours a month.

* All of the members of the Task Force agree "Nurses and other allied health professionals are underserved by the current system." All agree that the services provided primarily reach the physician and provide very little assistance in helping the other direct care providers maintain an awareness of current practice trends.

* Though there is no Montana specific evidence to support that hospital libraries primarily serve physicians, there is evidence for this position in the national literature. A survey of Southern California libraries found that only 4% of the responding libraries indicated that the library was open to all staff in 1984. Though this figure increased to 93% in 1989, the actual users of the library remained remarkably unchanged. Physicians made up 61% of users in 1984 and 59% in 1989 (Glitz,1992).

RECOMMENDATION

* Montana's legislators need to assure that all health professionals have access to bio-medical information. One method to accomplish this is through continuing education. Montana's posture on CE is inconsistent and inadequate for licensed health professionals. Because traditional CE has limited use in changing practitioner behavior or in maintaining competency, Montana needs to develop CE requirements that reflect these findings, and require practice-specific CE. It is this consistency that will assure that bio-medical information reaches all health professionals, even the most passive or remote.

Librarians need to join forces with the State's educators and develop innovative ways to provide bio-medical information to the individual through continuing education. A practice-specific continuing education product provides the following services;

1. A review of the client's practice data with specific scientific literature provides.

2. Monthly or quarterly table of contents review of selected journals with articles supplied as requested.

3. Routine literature searches as requested by the client,

4. On-going information provided on specified topics,

5. A review of the client's personal library and consultation on cataloging, methods of collection, additions, and deletions.

Dr. Soumerai, and I, recommend that distributors of bio-medical information take note of the pharmaceutical detailing distribution systems. He points out that the pharmaceutical detail men use successful techniques that can be applied to "academic detailing". These techniques include;

1. Conducting interviews to investigate baseline knowledge and motivations for current clinical habits,

2. Focusing programs on specific categories of practitioners as well as on their opinion leaders,

3. Defining clear educational and behavioral objectives,

4. Establishing credibility through a respected organizational identity, referencing authoritative and unbiased sources of information, and presenting both sides of controversial issues,

5. Stimulating active practitioner participation in educational interactions,

6. Using concise graphic educational materials,

7. Highlighting and repeating the essential message, and

8. Providing positive reinforcement of improved practices in follow-up visits.

Hospitals should not become the distribution point for a practice-specific continuing education product for the following reasons:

1. Rural hospitals can not afford to fund libraries adequately to support all health professionals.

2. Librarians in hospitals can not become experts on all areas of practice. A network of supporting expertise that is discipline and profession-specific is needed.

3. The hospital libraries do not incorporate the resources and perspectives from Montana universities, colleges, and technical programs.

4. Hospitals are often in competition with physicians, and therefore inappropriate reviewers.

5. Most Montana medical staffs and allied health professional staffs are not of sufficient size to conduct practice-specific reviews locally.

6. Montana cities with multiple physicians or allied health professionals representing a single specialty often find that these individuals are partners or competitors. These peers cannot achieve the emotional distance necessary for a non-threatening educational experience.

7. Hospitals have influence over the health professional's remuneration and privileges. Because of this they are unable to maintain the purity of thought necessary for an educational encounter.

It is very important that the hospital libraries be supported and remain available within the community hospital. However, it is equally important that they do not continue to be the only point of distribution. It would be very beneficial for hospital librarians to provide contractual services to an educational organization involved in practice-specific review, as long as that educational organization does not have authority over the health professional's privileges or financial remuneration.

PROBLEM 2. There is no State coordinating agency that takes a leadership role in designing an effective bio-medical information distribution system.

SUPPORTING EVIDENCE

* Since 1985 there has been no designated state coordination.

* Dr. Fuller and several other librarians on the Task Force recognize a need for statewide coordination to fill the gap left by the demise of MHSIN. Suggestions for coordination tasks are listed in Exhibit P.

* The Regional Medical Librarians report that the other states in Montana's region have a designated state coordinating agency either at the state's library or the state's medical school.

RECOMMENDATION

* The objectives identified in the 1980 MHSIN grant proposal need to be re-expressed by an organization within the state. The organization selected to provide this coordinating function should have the following characteristics;

1. An interest in developing innovative approaches to distributing bio-medical information,

2. No authority over the practitioner, his admissions, his privileging, employment status, financial remuneration or reimbursement,

3. Rural consumer governance representation of at least 51%, and

4. Governance representation that includes a balance of the various health professionals from rural communities and from Montana's universities, colleges, and technical programs.

This coordinating agency should be responsible for certifying and overseeing the practice-specific review programs developed by the various licensed disciplines. These certification programs should be developed in conjunction with the Office of the Commissioner of Higher Education and be placed with universities, colleges, or technical program where the primary education for the discipline is provided. There will be some situations where no Montana programs are available, e.g. physicians and occupational therapists. In these cases out-of-state relationships should be acknowledged and developed. The WAMI program being an example of such a program.

Each profession, and in many cases the specialties within a profession, must be considered on an individual bases. Each of these professions and practice-specific programs must have as an

integral part of its offering a trained medical librarian. It is the librarian's participation with a specific group of professionals that will allow the development of discipline-specific expertise. This program takes advantage of the current expertise located at various schools in Montana, and applies that expertise in conjunction with a medical librarian to all the practitioners within a given discipline within the state. Montana's policy makers can complete the circle by connecting practice with education and research. It is achievable by the development of an active bio-medical information distribution system.

PROBLEM 3. The electronic and human resources to support the bio-medical distribution systems in Montana need to be enhanced.

SUPPORTING EVIDENCE

* Electronic and human resource needs are defined by the National Network of Libraries of Medicine (NN/LM), Pacific Northwest Region, in a document entitled Basic Information Services. As can be seen in Exhibit Q this document is currently in a draft stage, though enthusiastically received at the last Region 6 Regional Advisory Committee (RAC minutes,1992).

* There are no studies to reflect the availability of these services to all health professionals in Montana, though a 1989 physician study is available through the work of the Montana Area Health Education Center (Flaherty,1989). This study reports that 20% of the physicians do not have access to a computer at home, office, or hospital; that 40% of the physicians do not have access to a modem in one of those locations; and that 54.5% of the physicians do not have access to telefacsimile equipment. This study also reports that 25% of the physicians do not have access to an organized library, either through their clinic or hospital. It is likely that Montana's non-physician's have less access to human and electronic resources than the access reported by physicians.

RECOMMENDATION

* The coordinating agency must conduct a survey to establish the availability of Montana's electronic resources in each community and formulate a plan that assures each professional access to the services recommended by the NN/LM, Pacific Northwest Region. The recommended practice-specific continuing education product provides a personal relationship for each health professional with a librarian, and thus meets the human resource needs identified by Montana's Regional Medical Librarians.

PROBLEM 4. Medical Librarians are defining their information focus, expertise, and service to traditional definitions and are not expanding their focus to "current literature" defined by the JCAHO as literature on "clinical and management processes, medical ethics, and the impact of patient care cultural systems upon health care management and the quality of care (Jones,1991)."

SUPPORTING EVIDENCE

* Medical librarians are not currently providing information to health professionals from patient data bases. Further, the systematic comparison of that data to practice protocols is also unavailable.

RECOMMENDATION

* If medical librarians are to participate in the understanding of clinical or management processes, then information reflecting those processes becomes essential. Montana librarians need to follow the call of the Joint Commission, Jones, Johnson and Manning and expand their focus and expertise to include computerized patient specific information and their comparison to clinical standards and protocols.

PROBLEM 5. There are no accessible and comprehensive Montana statistics on patient care.

SUPPORTING EVIDENCE

* Mr. Hopsted, Dr. Nelson, Mr. Taliafero and his staff all underline the need for aggregate patient data for planning, quality assurance, epidemiological studies, risk management, cost containment and utilization review. Dr. Damrow, Montana State Epidemiologist, points out the devastating effect one premature Medicaid infant can have on State funds. (51% of the total newborn delivery budget is spent on only 4% of the births. These costs do not include the average lifetime medical costs of $400,000 to care for a low birth weight baby (Governor Stephens,1990). To intensify the perspective on these dollars, one need only consider the economic drain on Montana that is created when these dollars leave our State to improve the economy of our neighbors.

* Currently there is no patient care data base for state or public investigation of health related policy issues.

RECOMMENDATION

* A patient care data base is essential if Montana is going to understand, and then solve, the health care problems facing its citizenry. Implementation of a uniform bill is the beginning of

this patient base. System designers must have the foresight to arrange this data such that providers and patients can access their confidential practice data, but that all other data users receive information sanitized of such identifiers. This design requirement is necessary for the information to be useful for practice-specific continuing education. It is also the design element that will finance the system and assure the quality of the information within the system. If patients and practitioners utilize the information for their own concerns, the potential number of clients rises exponentially. This design is also essential for data quality because data quality always depends on the data being used by those responsible for input. The design of a patient data base is currently underway through the funding of a Robert Wood Johnson Grant (Damrow,1992). Both AHEC and the medical librarians should secure positions on the steering committee for this Grant.

PROBLEM 6. Health consumers are not involved in health care policy decisions regarding cost and quality.

SUPPORTING EVIDENCE

* The scientific literature, the management literature, the literature on quality improvement, and Dr. Nelson all insist on the consumer's active involvement in the design, implementation, and assessment of any process that wishes to achieve quality. Laffel

et al draw an interesting comparison when they observe that CQI/TQM are similar to the scientific approaches to investigation because of the "strong emphasis both place on understanding the objectives and results of health care from the point of view of those being served - especially the patient (Laffel,1992)".

RECOMMENDATION

* Any Montana agency seeking to improve health care must have consumers responsible for its governance.

PROBLEM 7. All Task Force members agree that the remote areas of the state are underserved.

SUPPORTING EVIDENCE

* This is a unanimous perception of all Task Force members.

* This finding is supported by all available statistics.

* The Montana map in Exhibit Mc displays the absence of a librarian or Doc line* delivery services in all but 9 Montana counties.

RECOMMENDATION

* Legislative adoption of practice-specific CE requirements for all practitioners will assure that professionals in the remote areas of the state are served.

VI. OBJECTIVE 4. DEVELOP A LIST OF FUNDING SUGGESTIONS, A FUNDING RECOMMENDATION, THE NEXT STEPS, AND A METHOD OF SYSTEM EVALUATION.

A. FUNDING OPTIONS

There are three possible funding strategies; mandate, compete, and demonstrate. Combinations of these strategies may be developed. First, however, careful consideration must be given to each strategy's strengths and weaknesses.

1. MANDATE

If Montana legislators enact practice-specific continuing eduction requirements for all licensed professionals, the resulting bio-medical information system will have the following strengths and weaknesses.

a. Strengths

(1) The network will be financially self-supporting. Currently Montana licenses over 20,000 health professionals. With uniform billing and the availability of that information to the authorized CE agent of the practitioner, information gathering for practice review becomes a relatively inexpensive and straight forward issue. If 15 CE credits are required annually for each health professional, and the credits are provided at a competitive fee, millions of new dollars will be generated annually. These dollars will be directed specifically toward the improvement of Montana's patient care, health care professionals and educational system. These dollars will not be a new financial burden on any professional or institution; but merely redirected dollars toward an in-state CE program.

(2) M.D.'s and non-M.D.'s would benefit equally from this new bio-medical information system.

(3) Urban and rural practitioners would benefit equally from the system.

b. Weaknesses

(1) No one likes mandates. This is Montana!

2. COMPETE

The competition financial strategy pursues the certification of a CE product through the various continuing education certifying bodies. After certification and marketing to health professionals, some health professionals would transfer dollars to this product.

a. Strengths

(1) This approach appeals to the competitive entrepreneurial spirit.

(2) The individuals choosing to participate in the program would be highly motivated.

b. Weaknesses

(1) Only highly motivated professionals would take advantage of the system, thus reducing it's effectiveness for making a significant impact on the delivery of health care in all corners of the state, and by all licensed professionals in the state. Again, this approach would

provide services for the professionals that take the initiative to participate.

(2) The effort to persuade CE program accreditation bodies to recognize the new CE product may be difficult and time-consuming.

(3) Developing a CE market share will take time and an up-front investment of resources.

(4) It would be difficult to predict the financial success of the project.

3. DEMONSTRATION

This financial strategy would require a successful grant application for the development of a practice-specific information product. Funding for this demonstration could be sought from the National Library of Medicine, Blue Cross/Blue Shield, Montana's malpractice insurance company, the state or federal government, or other such organizations who are interested in changing the practitioners' practice patterns.

a. Strengths

(1) Funding may be available for this program. Many organizations are interested in supporting strategies that help practitioners optimize cost/quality decisions.

(2) This approach will identify highly motivated and willing participants.

b. Weaknesses

(1) This strategy will effect only a small portion of the health care professionals in the state.

(2) This strategy might mistakenly, focus solely on the physician. The regulations regarding health care reimbursement require a physician's order. This responsibility has made the physician the gatekeeper to most of the health care provided by other licensed health professionals. Because of this, physicians are often perceived by regulatory agencies as the key to controlling costs and quality. The actual health care delivered in Montana is highly dependent on the competence and knowledge of the nurses and other allied health professionals. Nurses currently comprise 75% of the health professionals in the state and thus have a tremendous influence on the quality and costs of health care. To demonstrate the power of a practice-specific CE

product all health professional in Montana must be considered.

(3) Grant funding will continue to perpetuate a transient solution to a chronic problem. Fits and starts of programmatic changes are resource intensive and minimally effective for producing long term results.

B. FUNDING RECOMMENDATION

After a careful review of each funding option and reflection on the potential value of an active bio-medical information distribution system, I recommend practice-specific continuing education be required of all licensed health practitioners. Though mandates do not appeal to this consultant, this recommendation is made because of the following considerations:

1. Assuring the safety of the governed is an appropriate activity for government,

2. The competition and demonstration models of financing will not succeed in reaching all licensed health professionals,

3. There is no current coordinating body capable of developing this continuing education network, therefore it is an appropriate activity for initial government coordination.

4. 67% of Montana's hospitals are not accreditated by the JCAHO, and therefore do not have the necessary resources committed to quality processes and peer review.

5. Many of Montana hospitals are so small that peer review is impossible. In some cases a hospital will have more than one physician, however the physicians often represent very different disciplines within the profession. This is also the situation with allied health professionals and nurses. It would be unusual to see more than one physical therapist, radiology technician, or respiratory therapist in a small rural hospital.

6. Montana needs to improve the dialogue between practicing professionals and the professionals located at Montana's universities, colleges, and technical programs. This dialogue will improve the educational offerings within the state and improve the quality of patient care.

C. NEXT STEPS

STEP 1. The Task Force adopts the findings and recommendations of this proposal.

STEP 2. The Task Force forwards these findings and recommendations to the Governor and requests that a bi-partisan legislative effort be initiated to draft legislation that would effect all licensed health professionals in the state and require practice-specific continuing education. This legislative effort needs to include the participation of consumers, educators, and health practitioners.

STEP 3. The Task Force requests the Governor to identify an organization that meets the recommended organizational requirements of;

1. An interest in developing innovative approaches to distributing bio-medical information,

2. No authority over the practitioner's admissions, privileges, employment status, financial remuneration or reimbursement,

3. Rural consumer governance representation of at least 51%, and

4. Governance representation that includes a balance of the various health professionals from rural communities and educators from Montana's universities, colleges and technical programs.

STEP 4. The Task Force requests that the Governor provide funding for this organization such that it can accomplish the following goals;

1. Identify and apply for potential sources of grant funding,

2. Participate in the development of draft legislation,

3. Develop requirements for practice-specific programs, and

4. Identify, contract with, and oversee the effectiveness of the educational organizations providing the practice-specific continuing education.

D. METHODS OF EVALUATION

The methods of evaluation for an active bio-medical distribution system are very different from the evaluation methods for a passive bio-medical information system. Both types of evaluation tools are provided.

1. Evaluation Of A Passive Bio-medical Information System.

The literature is replete with examples of methods for evaluating the passive library system. Examples are:

1. the number of inner-library loans,
2. budgeted dollars,
3. number of on-line searches,
4. number of professional staff in the library,
5. number of non-professional staff in the library,
6. number of books,
7. number of journals,
8. reporting relationship to administration,
9. number of requests,
10. number of referrals,
11. number of copies made,
12. size of the library's physical plant,
13. number of services provided,
14. number of trainings the librarian attends per year,

15. policies and procedures for the library,
16. orderliness of the collection,
17. existence of a library advisory committee, and
18. the number of cooperative arrangements.

2. Evaluation Of An Active Distribution System.

An active distribution system would evaluate the system from the perspective of the consumer. There are two consumers of an active distribution system, the health professional using the system and the health consumer as the final beneficiary of the system.

Examples of evaluation criteria from the perspective of the health professional might include the following:

1. success on recertification exams,
2. articles read that were found useful and changed the practitioner's behavior,
3. improved compliance with practice standards as determined through a review of orders or treatments,
4. increased requests for information initiated by the practitioner,
5. satisfaction indicated on annual questionnaire,

6. increase numbers of professionals with an on-site organized library, and
7. increase involvement in the training of new professionals.

Examples of evaluation criteria from the health consumer's perspective might include the following:

1. reduced infant mortality,
2. reduced incidence of unnecessary procedures as determined by comparable or improved outcomes in conjunction with reduced costs,
3. reduced number of iatrogenic illnesses,
4. improved diagnostic accuracy and/or timeliness,
5. an increase in the services available locally,
6. reduced use of unnecessary or incorrect antibiotics or other targeted drugs, and
7. increased compliance to practice standards or protocols that reduce costs and increase quality.

VII. CONCLUSION

Bio-medical information is a valuable resource for all health professionals. Though the value of the information is very great to the health professional, patients also have a tremendous

interest in the distribution of this information. The value of this information to the well-being of Montana's citizens is such that we cannot rely on the temperament of the practitioner to initiate a request. Time, money, or lack of information should not obstruct the distribution of bio-medical information. The current passive distribution system serves a valuable need for those who pursue its offerings. This system does not reach 45% of the physicians and an even greater percentage of the over 15,000 nurses and allied health professionals. A distribution model must be developed and financed to meet the needs of all professionals, not just an active few.

By working with Montana educators and consumers, Montana's practicing health professionals can design and finance practice-specific continuing education programs. There are currently over 20,000 licensed health professionals in Montana. Many of these professionals are already expending 1000's of dollars annually for continuing education. By refocusing these dollars to effective in-state programs, Montana's patients, health professionals, educators, economy, and health delivery system will benefit. In the light of these benefits, the current system of distribution provides an unattractive alternative.

VIII. REFERENCES

IX. EXHIBITS

References

Alldredge, Noreen S., Montana Health Sciences Information Network Terminal Progress Report, Montana State University, May 23, 1984.

American Hospital Association, "American Hospital Association Guide to the Health Care Field", 1985.

American Hospital Association, "Survey of Health Sciences Libraries in Hospitals 1989, Executive Summary", 1989.

American Medical Association, "Statement of the American Medical Association to the Subcommittee on Health, Committee on Ways and Means, U.S. House of Representatives; Re: Physician Relicensure or Recertification", May 7, 1990.

Augustave, Steve, "Medical Libraries, No Longer Mandated by Medicare, are Losing Out at Budget Time", Modern Healthcare, April 30, 1990, pp. 36.

Berwick, D., "Controlling Variation in Health Care: A Consultation from Walter Shewhart", Med Care, Vol. 29, 1991, pp. 1212-1225.

Bulletin of the Medical Library Association, "Advocacy of Hospital Information Services: The Promise of the 1990's", April 1990.

Burroughs, Catherine M., "Clinicians' Satisfaction with Grateful Med: An Exploratory Study", Bulletin of the Medical Library Association, Vol. 77 No. 1, January 1989.

Carline, Jan D., Ph.D., et al, "The Knowledge Base of Certified Internists: Relationships to Training, Practice Type, and Other Physician Characteristics", Arch Intern Medicine, Vol. 149, October 1989, pp. 2311-2313.

Clintworth, William A., "Continuing Education and Library Services for Physicians in Office Practice", Bulletin of the Medical Library Association, October 1979, pp. 353-358.

"Conceptual Framework for Continued Competence", National Council of State Boards of Nursing, Inc., 1991.

"Continued Competency Task Force Meeting Minutes", Montana State Board of Nursing, January 22, 1992.

Covell, David G., M.D., et al, "Information Needs in Office Practice: Are They Being Met?", Annals of Internal Medicine, Vol. 103, 1985, pp. 596-599.

Cress, D. D., "Report of Direct Patient Monitoring", St. Peter's Community Hospital, Helena, MT, 1991.

Dalrymple, Prudence W., Ph.D., "CD-ROM MEDLINE Use and Users: Information Transfer in the Clinical Setting, Bulletin of the Medical Library Association, Vol. 78 No. 3, July 1990.

Damrow, Todd, Dr., State Epidemiologist, "A Proposal to Develop a Plan for a Comprehensive Health Policy Management Information System," Montana Cooperative Center for Health Statistics, March 1, 1992.

Medicare and Medicaid Programs: Conditions of Participation for Hospitals, Federal Register, Vol. 51, 1986, pp. 22033-22034.

Ferguson, Kristi J., Ph.D., Richard M. Caplan, M.D., "Physicians' Preferred Learning Methods and Sources of Information: Do Self-Identified Independent Learners Differ From Course Participants?", Mobius, Vol. 7, No. 1; January 1987, pp. 1-9.

Flaherty, Robert J. M.D., et al, "How Montana Physicians Acquire Patient Management-Information", Montana Health Education Center, September 1989.

Flaherty, Robert J. M.D., "Strategic/Long Range Planning Committee Report to Montana AHEC Board of Directors", June 1990.

Glitz, Beryl, M.L.S., "The Changing Status of Hospital Libraries 1984 to 1989: Characteristics and Services in Region 7 of the National Network of Libraries of Medicine", Bulletin of the Medical Library Association, Vol. 80, No. 2, April 1992, pp. 179-183.

Gruppen, Larry D., Ph.D., "Physician Information Seeking: Improving Relevance Through Research", Bulletin of the Medical Library Association, Vol. 78, No. 2, April 1990, pp. 165-172.

Haynes, Brian R., et al, "Computer Searching of the Medical Literature" Annals of Internal Medicine, Vol. 103, 1985, pp. 812-816.

Holt, Suzy, MLS, AHIP, "Individual Library Outreach Project; Grateful Med Outreach Project Final Report", Shodair Hospital Library, May 1992.

"Improving Health Professionals' Access to Information", Report of the Board of Regents, National Library of Medicine Long Range Plan, U. S. Dept. of Health and Human Services, August 1989.

Johnson, Millard F., Jr., "After the Online Catalog: A Call for Active Librarianship", American Libraries, April 1982, pp. 235-239.

Joint Commission on Accreditation of Hospitals (i.e., JCAHO, Joint Commission on Accreditation of Health Care Organizations), Accreditation Manual for Hospitals-Professional Library Services, 1990, 1991, 1992.

Joint Commission on Accreditation of Health Care Organizations, An Introduction to Quality Improvement in Health Care, 1991.

Jones, Christiane J., "JCAHO Makes Transition to Quality Improvement", National Network, August 1991, pp. 1-5.

Kritchevsky, S.B., Simmons, B.P., "Continuous Quality Improvement: Concepts and Applications for Physician Care", JAMA, Vol. 266, 1991, pp. 1817-1823.

Laffel, Glenn, M.D., Ph.D., Berwick, Donald M., M.D., "Quality in Health Care", JAMA, Vol. 268, No. 3, July 15, 1992, pp. 407-409.

Manning, Phil R. M.D., Clintworth, William A., "A Method of Self-Directed Learning in Continuing Medical Education With Implications for Recertification", Annals of Internal Medicine, Vol. 107, 1987, pp. 908-913.

Manning, Phil R., M.D., "Continuing Education Needs of Health Care Professionals", Bulletin of the Medical Library Association, Vol. 78, No.2, April 1990, pp. 161-164.

Manning, Phil R., M.D., et al, "Changing Prescribing Practices Through Individual Continuing Education", JAMA, Vol. 256, No. 2, July 11, 1986, pp. 230-232.

Manning, Phil R., M.D., Petit, Donald W. M.D., "The Past, Present, and Future of Continuing Medical Education: Achievements and Opportunities, Computers and Recertification", JAMA, Vol. 258, No. 24, December 25, 1987, pp. 3542-3546.

Manning, Phil R., M.D., "Continuing Education Needs of Health Care Professionals", Bulletin of the Medical Library Association, Vol. 78, No. 2, April 1990, pp. 161-164.

Marshall, Joanne G., Ph.D., "Characteristics of Early Adopters of End-user Online Searching in the Health Professions", Bulletin of the Medical Library Association, Vol. 77, No. 1, January 1989, pp. 48-54.

Marshall, Joanne G., Ph.D., "The Impact of Information Provided by the Hospital Libraries in the Rochester Area on Clinical Decision-making", May 1991.

McCarty, K., "Hospitals on the Frontier", Health Progress, Vol.73, May 1992, pp. 42-45.

McClain, Alice, "Montana Health Sciences Library Network Grant Application", December 1980.

McNabb, Corrine R., "End User Searching in the Small Hospital Setting", The End User's Viewpoint, 1985, pp. 205-211.

Messerle, Judith, "Health Sciences Libraries: Strategies in an Era of Changing Economics", Bulletin of the Medical Library Association, Vol. 75, No. 1, January 1987, pp. 27-33.

Mitchell, Joyce A., et al, "Medical Students Using Grateful Med: Analysis of Failed Searches and a Six-month Follow-up Study", Computers and Biomedical Research, Vol. 25, 1992, pp. 43-55.

Biennial Report for Fiscal Years 1988 and 1989", Montana Department of Commerce-Professional and Occupational Licensing Bureau, June 30, 1989.

Moore-West, Maggi, Ph.D., "Information-Seeking Behavior Among Physicians Practicing in Urban and Nonurban Areas", 1984.

Pacific Northwest Regional Health Sciences Library Service, "Results of the 1990 Survey of Hospital Libraries", October 1990.

Pacific Northwest Regional Health Sciences Library Service; Consultation and Development Working Committee, "Results of the 1983 Survey of Hospital Libraries", March 1985.

President's Commission, Report to the President, 1989, p. 381, quoted by "Improving Health Professionals' Access to Information", Board of Regents National Library of Medicine, 1989.

Ramsey, Paul G., M.D., "Changes Over Time in the Knowledge Base of Practicing Internists", JAMA, Vol. 266, No. 8; August 28, 1991.

Ramsey, Paul G., M.D., "Final Report to the American Board of Internal Medicine: Assessment of the Clinical Competence of Certified Internists, May 1990.

Regional Advisory Committee (RAC), "Minutes of the National Network of Libraries of Medicine; Pacific Northwest Region", April 20, 1992.

Salisbury, Linda, "Brief Communications: The Effect of End-user Searching on Reference Services: Experience with MEDLINE and Current Contents", Bulletin of the Medical Library Association, Vol. 78, No. 2, April 1990.

Schweer, Jean E., R.N., B.S., M.S., Creative Teaching in Clinical Nursing, Mosby, St. Louis, 1972.

Soben, Phyllis, "Grateful Med Searching: A Hospital Library Perspective", Medical Reference Services Quarterly, Vol. 7, No. 3, 1988.

Soumerai, Stephen, ScD., Avorn, Jerry, MD., "Principles of Educational Outreach ('Academic Detailing') to Improve Clinical Decision Making," JAMA, Vol. 263, No. 4; January 26, 1990, pp. 549-556.

Stephens, Stan, Governor, Robinson, Julia E., "Health Care for Montanans", 1990.

University of the State of New York, Manual for Assessing the Quality of Health Sciences Libraries in Hospitals, The State Education Department, 1983.

Wakeley, Patricia J., "The Marketing Audit: A New Perspective on Library Services and Products", Bulletin of the Medical Library Association, Vol. 76, No. 4, October 1988, pp. 323-327.

Walker, Cynthia J., "Problems Encountered by Clinical End Users of MEDLINE and GRATEFUL MED", Bulletin of the Medical Library Association, Vol. 79, No. 1, January 1991, pp. 67-69.

Wolf, Fredric M., et al, "Evaluation and the Health Professions; Dimensions of Motivation for Continuing Medical Education of Primary Care Physicians", Vol. 9, No. 3, September 1986, pp. 305-316.

EXHIBIT A

BIO-MEDICAL INFORMATION TASK FORCE MEMBERS

Noreen Alldredge
Renne Library
MSU
Bozeman, MT

Dick Brown
Montana Medical Association
Helena, MT

Robert J. Flaherty, MD
Montana Area Health Education Center
MSU
Bozeman, MT

Dr. Sherilynn Fuller
Health Sciences & Information Center
University of Washington
Seattle, WA

Suzy Holt
Shodair Children's Hospital Library
Helena, MT

Kyle Hopstad
Frances Mahon Deaconess Hospital
Glasgow, MT

Richard Miller
Montana State Library
Helena, MT

Van Kirke Nelson, MD
Kalispell, MT

Julia Sadler
Billings Clinic Medical Library
Billings, MT

Edwin Stickney, MD
Miles City, MT

Dr. Terese Sullivan
Helena, MT

J. Dale Taliaferro
Dept. of Health & Environmental Sciences
Helena, MT

David Toppen, Ph.D.
Office of the Commissioner of Higher Education
Helena, MT

Impact of Information from the Hospital Library on Clinical Decision Making: Changes Reported by Physicians

Changes	Physicians, %*						
	All (n = 208)	Residents (n = 52)	Rural (n = 43)	Urban (n = 113)	χ^2	*df*	*P*
Handled situation differently	80.4	88.5	86.0	71.7	7.70	2	.02†
Changed diagnosis	29.3	38.5	14.0	31.0	7.14	2	.02†
Changed tests	50.5	59.6	55.8	44.2	3.98	2	.14
Changed drugs	45.2	42.3	48.8	45.1	.40	2	.82
Reduced length of stay	19.2	25.0	18.6	16.8	1.55	2	.46
Changed advice to patient	71.6	73.1	65.1	73.5	1.13	2	.57
Avoided hospital admission	11.5	7.7	14.0	12.4	1.08	2	.58
Avoided patient mortality	19.2	28.8	14.0	16.8	4.29	2	.12
Avoided hospital-acquired infection	8.2	15.4	7.0	5.3	4.92	2	.09
Avoided surgery	21.2	30.8	16.3	18.6	3.94	2	.14
Avoided additional tests and/or procedures	49.0	67.3	37.2	45.1	10.04	2	.00†

*The percentage represents the proportion of physicians who answered yes to the items. All no, not applicable, and missing values were coded as no.

†Results statistically significant at the .05 level or better.

(Marshall, 1991)

Physician's Response to Clinical Pharmacists's Suggested Practice Changes

PRACTICE CHANGES	# PATIENTS REVIEWED	# OF EVALUATIONS WITH A PHARMACIST'S RECOMMENDATION	# OF RECOMMENDATIONS IMPLEMENTED BY M.D.	% OF M.D.'S THAT CHANGED BEHAVIOR
PHARMACOKINETICS	296	161	129	80%
IV ANTIBIOTIC SCREENING	208	24	21	87.5%
PIGGYBACK SCREENING	42	17	13	76.47%
DRUG DUPLICATION	3280	186	177	95.16%
DRUG DOSING	430	158	90	56.9%

(Cress, 1991)

TABLE 2 LICENSE REREGISTRATION - CONTINUING MEDICAL EDUCATION (CME) REQUIREMENTS
Board requirements for accumulation of continuing medical education (CME) credits prior to each license reregistration.

	No	Yes	Amount Required
AL	X		
AK		X	17 hrs Category I per yr
AZ		X	20 hrs per yr in any category
AR	X		
CA		X	50 hrs Category I per 2 yrs
CO	X		
CT	X		
DE		X	40 hrs Category I per 2 yrs
DC	X		
FL		X	40 hrs Category I per 2 yrs, 5 hrs of which must be in risk mgmnt
GA	X		
GU		X	Not listed
HI		X	50 hrs per yr, 20 hrs of which must be Category I
ID	X		
IL	X		Not listed
IN	X		
IA		X	40 hrs Category I per 2 yrs
KS		X	150 hrs per 3 yrs, 60 hrs of which must be Category I
KY	X		
LA	X		
ME		X	100 hrs per 2 yrs, 40 of which must be Category I
MD		X	40 hrs Category I and 60 hrs Category II per 2 yrs
MA		X	100 hrs per 2 yrs, at least 40 hrs Category I, 10 hrs risk mgmnt,2 hrs on board regs
MI		X	150 hrs per 3 yrs
MN		X	75 hrs per 3 yrs (at least 45 hrs Category I, no more than 20 any other taught Category)
MS	X		
MO		X	75 hrs Category I per 3 yrs
MT	X		
NE	X		
NV		X	20 hrs per yr
NH		X	150 hrs per 3 yrs
NJ	X		
NM		X	75 hrs Category I per 3 yrs
NY	X		
NC	X		
ND	X		
OH		X	100 hrs per 2 yrs, 40 of which must be Category I
OK	X		
OR	X		
PA	X		
PR	No Information Provided		
RI		X	60 hrs per 3 yrs
SC	X		
SD	X		
TN	X		
TX	X		
UT	X		
VT	X		
VA	X		
VI	No Information Provided		
WA		X	150 hrs Category I per 1 yrs
WV	X		
WI		X	30 hrs Category I per 2 yrs
WY	X		
Totals:	30	22	

SPECIALTY BOARDS RECERTIFICATION REQUIREMENTS

	YES	NO
ALLERGY AND IMMUNOLOGY	X	
DERMATOLOGY	X	
EMERGENCY MEDICINE	X	
FAMILY PRACTICE	X	
INTERNAL MEDICINE	X	
NUCLEAR MEDICINE	X	
OBSTETRICS/GYNECOLOGY	X	
OPHTHALMOLOGY	X	
ORTHOPAEDIC SURGERY	X	
OTOLARYNGOLOGY	X	
PATHOLOGY	X	
PEDIATRICS	X	
PHYSICAL MEDICINE & REHABILITATION	X	
SURGERY	X	
THORACIC SURGERY	X	
UROLOGY	X	
ANESTHESIOLOGY		X
COLON & RECTAL SURGERY		X
NEUROLOGICAL SURGERY		X
PLASTIC SURGERY		X
PREVENTIVE MEDICINE		X
PSYCHIATRY & NEUROLOGY		X
RADIOLOGY		X

AMA CONTINUING EDUCATION PROGRAM

Risk Management Programs

The AMA is involved in a project that should demonstrate one mechanism of providing an effective and practical means of demonstrating the competence of this group of physicians.

A pilot risk management project in the State of Oregon (AMA/Specialty Society Medical Liability Project) should help ensure that physicians meet minimum standards of competency. The three components of this risk management program are:

1) Office Self-Assessment Survey

The Office Self-Assessment Survey is designed to help physicians inventory the non-clinical aspects of their practice. Participants receive a report comparing their responses to those of their colleagues in the same specialty and with the same office type so they can see how they "stack up." It is expected that they will thus notice aspects of their practice that deserve attention and modification.

2) Self-Study Course

The goal of the self-study course is for physicians to explore how certain practice and behavior deficiencies (many of which are alluded to in the Self-Assessment Survey) operate to expose physicians to medical malpractice claims. The participant essentially peer-reviews a series of five "Physician Practice Review" packets, each containing a specialty-specific physician profile with claim abstracts and related documents, all based on actual physicians and claims. Completion of the course includes having the participant comment upon those practice and behavior patterns in his/her own practice which may be similar to those of the physician just reviewed.

3) In-Office Survey

The in-office survey is intended to uncover any problems that remain after the first two segments of the program have been completed so that appropriate action can be initiated if necessary. A physician and a clinic manager survey the practice and give direct feedback at the conclusion of the half-day visit. Information from the Office Self-Assessment Survey and the Self-Study Course may also be presented and discussed.

This project, refined and enlarged, will provide a means to collect national, cross-specialty data on the effectiveness of loss prevention efforts. These data will allow physicians to educate themselves on methods of improving the quality of the medical services offered in their practice.

State Boards of Nursing and RN Licensure Regulations

EXHIBIT G

To obtain information about additional regulations governing initial or reciprocal licensure in the state in which you are seeking employment, telephone or write to the board of nursing.

STATE	BOARD OF NURSING	LICENSING PERIOD	FEES			TEMPORARY PERMIT		LIMITATIONS ON RE-EXAMINATION	C.E. REQUIREMENTS
			EXAM	ENDORSEMENT	RENEWAL	FEE	TIME LIMIT		
Alabama	Board of Nursing Suite 203, 500 East Boulevard Montgomery, Alabama 36117 (205) 261-4000	Biennial December 31 even year	$45	$55	$35	$15	pending results of first exam; 3 months if by endorsement	no limit	none Yes
Alaska	Board of Nursing Div. of Occupational Licensing P.O. Box D Juneau, Alaska 99811 (907) 465-2544	Biennial November 30 even year	$145	$90	$90	$20	4 months if by endorsement. Results of first exam if by exam	3 times within 5 yrs, then only with remediation	Two of the following three required for license renewal: 1. 15 contact hours of CE 2. 15 hours of professional activities 3. 500 hours of nursing employment
Arizona	Board of Nursing 2001 W. Camelback Rd. Suite 350 Phoenix, Arizona 85015 (602) 255-5092	Biennial December 31	$65 $50 (NCLEX fee not included)	$45	$40 (2 years)	$25	4 months if by endorsement. Pending results of 1st exam	3 times, then only with remediation	none
Arkansas	State Board of Nursing Univ. Tower Bldg. Suite 800, 1123 S. Univ. Ave. Little Rock, Arkansas 72204 (501) 371-2751	Biennial birthdate	$41.50	$50	$25	$10	pending results of first exam; 3 months if by endorsement	no limit	none
California	Board of Registered Nursing 1030 15th St. Suite 200 Sacramento, California 95814 (916) 322-3350	Biennial last day of month following birth month	$80 exam fee $27 fingerprint fee	$30 endorsement fee $27 fingerprint fee	$45	$15	pending results of first exam; 6 months if by endorsement	no limit	all Registered Nurses 30 contact hours every 2 years
Colorado	Board of Nursing 1560 Broadway, Suite 670 Denver, Colorado 80202 (303) 894-2430	Biennial September 30	$75	$97	$56	Included in application fee	pending results of first exam; 4 months if by endorsement	no limit	20 contact hours every 2 years
Connecticut	Department of Health Services, Nurse Licensure 150 Washington Street Hartford, Connecticut 06106 (203) 566-1032/1036	Annual last day of month of birth	$90 (NCLEX fee not included)	$90	$50	Included in application fee	pending results of first exam for new graduates; temporary permit also available for endorsement applicants, valid for 120 days, non-renewable; must hold valid license in another state	no limit	none
Delaware	Board of Nursing Margaret O'Neill Building P.O. Box 1401 Federal & Court Streets Dover, Delaware 19901 (302) 736-4522	Biennial December 31 odd year (RN) even year (LPN)	$40 $40 for NCLEX	$40	$40	Included in application fee	90 days renewable pending results of first exam; endorsement applicants must hold valid license in another state	10 times within 5 years 1 year re-exams	nurses not actively employed in past 5 years must provide evidence of satisfactory completion of refresher program within past year; must have 1000 hrs employment in past 5 years to renew.
District of Columbia	Nurses Examining Board 614 H Street, N.W. rm 923 Washington, D.C. 20001 (202) 727-7468	Biennial	$30	$40	$48 (2 years)	none	none	no limit	applicants for reinstatement of a license must submit 12 contact hours for each year after 6/30/1990 that applicant was not licensed, up to a maximum of 24 contact hours.
Florida	Board of Nursing Suite 516, 111 E. Coastline Drive Jacksonville, Florida 32202 (904) 359-6331	Biennial March 31 odd year	$165	$165	$27	none	pending results of first exam; 120 days if by endorsement	no limit	all Registered Nurses 24 contact hours every 2 years
Georgia	Board of Nursing Suite 400, 166 Pryor Street, S.W. Atlanta, Georgia 30303 (404) 656-3943	Biennial December 31 even year	$40 NCLEX $40 exam fee $80 total	$60	$45 ($30 if paid before 10/31)	Included in application fee	6 months	3 times	none

STATE	BOARD OF NURSING	LICENSING PERIOD	FEES			TEMPORARY PERMIT		LIMITATIONS ON RE-EXAMINATION	C.E. REQUIREMENTS
			EXAM	ENDORSEMENT	RENEWAL	FEE	TIME LIMIT		
Hawaii	Board of Nursing, Licensing Br. Box 3469 Honolulu, Hawaii 96801 (808) 548-4100	Biennial June 30 odd year	$40 LPN $50 RN (Application fee-$20)	Fees vary depending on year license is issued. Noted on application information sheet.		—	pending results of first exam; or completion of endorsement	no limit	none
Idaho	Board of Nursing 280 No. 8th St., Suite 210 Boise, Idaho 83720 (208) 334-3110	Biennial August 31 odd year	$60	$65	$40	$15	90 days or until examination scores released; 90 days if by endorsement	no limit	Nurse Practitioners 40 contact hours every 2 years
Illinois	Dept. of Professional Regulation 320 W. Washington Street Springfield, Illinois 62786 (217) 785-0800	Biennial May 31 even year	$31 $50 licensure fee	$50	$20/2 years	Included in application fee	pending results of first exam	6 times	none
Indiana	State Board of Nursing Health Professions Bureau One American Sq. Suite 1020, Box 82067 Indianapolis, Indiana 46282 (317) 232-2960	Biennial October 31 odd year	$30 plus NCLEX fee	In: $30 Out: $10	$20/2 years	$10	pending results of first exam; 60 days if by endorsement	no limit	none
Iowa	Board of Nursing 1223 East Court Des Moines, Iowa 50319 (515) 281-3255	Triennial birth month	$45	$60	$48	Included in application fee	pending results of first exam; 90 days if by endorsement	Unlimited NCLEX-RN	all Registered Nurses 45 contact hours every 3 years
Kansas	State Board of Nursing 900 S.W. Jackson Suite 551 S. Topeka, Kansas 66612-1256 (913) 296-4929	Biennial birthdate	$70	$70	$40	Included in application fee	pending results of first exam; 60 days if by endorsement	must retake entire examination	all Registered Nurses (and LPNs) 30 contact hours every 2 years
Kentucky	Board of Nursing Suite 430, 4010 Dupont Circle Louisville, Kentucky 40207 (502) 897-5143	Biennial October 31 even year	$135 includes NCLEX fee of $40	$60	$40	Included in application fee	pending results of first exam; 6 months if by endorsement	no limit	all Registered Nurses 30 contact hours every 2 years
Louisiana	Board of Nursing Room 907, 150 Baronne Street New Orleans, Louisiana 70112 (504) 568-5464	Annual December 31	$35 plus national fee	In: $50 Out: $15	$25	Included in application fee	pending results of first exam; 90 days if by endorsement	no limit	none
Maine	Board of Nursing 35 Anthony Ave. State House Sta. 158 Augusta, Maine 04333 (207) 289-5334	Annual birthdate	$60 (RN) $50 (LPN)	$60 (RN) $50 (LPN)	$20	Included in application fee	90 days	no limit	none
Maryland	Board of Nursing 4201 Patterson Ave. Baltimore, Maryland 21215 (301) 764-4747	Annual birth month	$60	$50	$12	$10	90 days, not renewable	no limit	none
Massachusetts	Board of Registration in Nursing Room 1519, 100 Cambridge Street Boston, Massachusetts 02202 (617) 727-9961	Biennial birthdate even year	RN $101 Includes NCLEX fee	$50	$40	none	grace period for new graduate pending results of first exam	no limit	all Registered Nurses 15 contact hours every 2 years
Michigan	Board of Nursing P.O. Box 30018 Lansing, Michigan 48909 (517) 373-1600	Biennial March 31	$75 $30 license fee	$30	$20	$10	18 months, but void upon exam failure	no limit	none
Minnesota	Board of Nursing 2700 University Ave. W. #108 St. Paul, Minnesota 55114 (612) 642-0567	Biennial birthdate	$75	$55	$26	Included in application fee	pending results of first exam; 6 months if by endorsement	no limit	all Registered Nurses 30 contact hours every 2 years, including one skill demonstration

STATE	BOARD OF NURSING	LICENSING PERIOD	FEES			TEMPORARY PERMIT		LIMITATIONS ON RE-EXAMINATION	C.E. REQUIREMENTS
			EXAM	ENDORSEMENT	RENEWAL	FEE	TIME LIMIT		
Pennsylvania	Board of Nursing Box 2649 Harrisburg, Pennsylvania 17105-2649 (717) 783-7142	Biennial renewal due by license number	$35-board $40-NCLEX	$25	$15-RN $10-PN	$10	1 year maximum, examination results pre-empt permit	no limit	none
Rhode Island	Bd of Nurse Registration and Nursing Ed. Three Capitol Hill, Rm. 104 Providence, Rhode Island 02908 (401) 277-2827	Biennial March 1 By license number odd/even	$75-BOARD $40-NCLEX	$75	$30	none	none	no limit	none
South Carolina	Board of Nursing Suite 220, 220 Executive Center Drive Columbia, South Carolina 29210 (803) 731-1648	Annual October 1- January 31	$65	$75	$25	$10	pending results of first exam; 8 weeks if by endorsement	2 times, then only with remediation up to 7 times, then must requalify	none
South Dakota	Board of Nursing, Suite 205 504 South Phillips Avenue Sioux Falls, South Dakota 57102 (605) 335-4973	Biennial birthdate	$60 plus test service fee	$75	$55 (includes $10 for the nurse education assistance loan fund)	$15	pending results of first exam; 90 days if by endorsement	unlimited within 6 yr. period	none
Tennessee	Board of Nursing 283 Plus Park Boulevard Nashville, Tennessee 37247-1010 (615) 367-6232	Biennial December 31 even year	$50 plus $40 to test service	$70	$35	$5	pending results of first exam; 6 months if by endorsement	no limit	continued competency requirement
Texas	Board of Nurse Examiners P.O. Box 140466 Austin, Texas 78714 (512) 835-4880	Biennial birthdate odd/even year	$90	$60	$22	$15	pending results of first exam; 90 days if by endorsement	no limit	enabling law passed 1989 YES
Utah	Board of Nursing Division of Professional Licensing 160 E. 300 South, Box 45802 Salt Lake City, Utah 84145 (801) 530-6628	Biennial December 31 odd year	$50 plus $25 to test service	$50	$35	$15	pending results of first exam; 90 days if by endorsement	2 times, then remediation required. Must pass within 3 years or requalify.	continuing practice requirement. 200 hrs. pr. yr. or 1200 hrs. in 6 yrs.
Vermont	Board of Nursing 26 Terrace Street Montpelier, Vermont 05602 (802) 828-2363	Biennial RN 3-31-91 LPN 1-31-92 April 30 odd year	$110	$60	$35	none	pending results of first exam; or completion of endorsement	3 times, then need Board of Nursing approval	none
Virginia	Board of Nursing 1601 Rolling Hills Dr. Richmond, Virginia 23229 (804) 662-9909	Biennial birthdate/birthyear	$45	$45	$28	none	pending results of first exam; 30 days if by endorsement	no limit	none
Washington	Board of Nursing Division of Professional Licensing Box 1099 Olympia, Washington 98507-1099 (206) 753-2206	Annual birthdate	$40	$25	$20	none	pending results of first exam; new graduates only—must take first available exam after graduation	3 times in 2 years; then must requalify	advanced registered nurse practitioner: 30 contact hours every 2 years, with prescriptive authorization: 15 added hrs. in pharmacology as of Jan. 1, 1987.
West Virginia	Board of Examiners for RNs Room 309, Exhibition Building 922 Quarrier Street Charleston, West Virginia 25301 (304) 348-3596	Annual December 31	$51.50 $40.00 for NCLEX	$30	$10	none	pending results of first exam; new graduates only	no limit	none
Wisconsin	Board of Nursing P.O. Box 8935 Madison, Wisconsin 53708 (608) 266-3735	Biennial March 1 even year	$73 thru Feb. 91 (are changing test service in July '91. Anticipate fee decrease)	$50	$32	$10	6 months upon proof of graduation; 3 months if by endorsement	no limit	none
Wyoming	Board of Nursing Barrett Bldg, 3rd Floor 2301 Central Ave Cheyenne, Wyoming 82002 (307) 777-7601	Biennial June 30 even year	$75	$80	$50 biennial	$55, graduate without licensure; Temp. permit included with licensure by endorsement or examination; $20, one-time 90 day permit	pending results of first exam; 90 days if by endorsement	2 times, then only with remediation	continued competency requirement

STATE	BOARD OF NURSING	LICENSING PERIOD	FEES			TEMPORARY PERMIT		LIMITATIONS ON RE-EXAMINATION	C.E. REQUIREMENTS
			EXAM	ENDORSEMENT	RENEWAL	FEE	TIME LIMIT		
Mississippi	Board of Nursing 239 N. Lamar, Suite 401 Jackson, Mississippi 39201-1311 (601) 359-6170	Biennial December 31 even year (RN) odd year (LPN)	$50 (RN) $35 (LPN) + $40 NCLEX	$50 (RN) $35 (LPN)	$35 (RN) $30 (LPN)	$10	pending results of first exam; 90 days if by endorsement	2 times, then only with remediation	Nurse Practitioners as of September 1981 40 hours every 2 years
Missouri	Board of Nursing P.O. Box 656, 5324A N. Ten Mile Dr. Jefferson City, Missouri 65102 (314) 751-0681	Annual April 30	$15	$25	$16	Included in application fee	6 months	no limit	none
Montana	Board of Nursing Arcade Bldg. - Lower Level 111 N. Jackson Helena, Montana 59620-0407 (406) 444-4279	Annual December 31	$35	$35	$20	Included in application fee	pending results of first exam; 3 months if by endorsement	no limit	none
Nebraska	Board of Nursing P.O. Box 95007 Lincoln, Nebraska 68509 (402) 471-2115	Biennial even year	$50 + $40 NCLEX	$50	$30	Included in application fee	pending results of first exam; up to 1 year if by endorsement	no limit	all Registered Nurses 200 hrs. of practice plus 20 contact hrs. or 75 contact hrs. within preceding 5 years
Nevada	Board of Nursing Suite 114, 1281 Terminal Way Reno, Nevada 89502 (702) 786-2778	Biennial birthdate after 1/1/86	$65 license $50 exam	$65	$50	Included in application fee; $40 if not seeking permanent license	4 months, not renewable in 12 month period	3 times, then only with remediation	all Licensed Nurses 30 contact hours every 2 years at renewal. Nurse Practitioners & CRNAs additional 15 contact hours in pharmacology
New Hampshire	N.H. Board of Nursing Div. of Public Health Svcs. 6 Hazen Dr. Concord, New Hampshire 03301-6527 (603) 271-2323	Biennial birthdate	$60	$60	$50	no fee	6 months or until results of first exam are received and license issued	no limit	Nurse Practitioners 15 contact hrs. pr. yr.
New Jersey	Board of Nursing, Room 508 1100 Raymond Boulevard Newark, New Jersey 07102 (201) 648-2490	Biennial December 31	$40	$35	$24	$5	pending results of first exam	3 times, then remediation required	none
New Mexico	Board of Nursing 4253 Montgomery N.E. Suite 130 Albuquerque, New Mexico 87109 (505) 841-8340	Biennial birthdate odd year (RN) even year (LPN)	$75 (RN) $45 (LPN)	$75 (RN) $45 (LPN)	$40 (RN) $40 (LPN)	Included in application fee. Must have N.M. employment verified	10 weeks following first exam; 6 months if by endorsement	no limit	all Registered Nurses 30 contact hours every 2 years; Nurse Practitioners an additional 70 contact hrs. which includes 8 hrs. min. in pharmacology every 2 yrs.
New York	Board of Nursing State Ed. Dept. Cultural Education Center Albany, New York 12230 (518) 474-3843	Triennial as of September 1, 1983	$165	$120	$50	$35	10 days after exam scores posted; 1 year if by endorsement	no limit	one time requirement for registration 2 hr. course on child abuse
North Carolina	P.O. Box 2129 Raleigh, North Carolina 27602 (919) 782-3211	Biennial December 31	$40	$50	$40	Included in application fee	6 months, not renewable	within 3 years if graduated after July 1, 1981	none
North Dakota	Board of Nursing 919 S. 7th St., Suite 504 Bismarck, North Dakota 58504-5881 (701) 224-2974	Biennial	$65	$65	$60 (RN) $50 (LPN)	Included in application fee	pending results of first exam; 90 days if by endorsement	no limit	Nursing practice for reinstatement must meet or exceed 80 hrs. pr. yr. or 400 hrs. within preceding 4 yrs.
Ohio	Board of Nursing 77 South High Street, 17th Floor Columbus, Ohio 43266-0316 (614) 466-3947	Biennial September 1 odd year	$50	$50	$20	Included in application fee	endorsement-4 months, examination-expires when results are released by the board	no limit	to renew 9/1/94, 24 hours in 2-year period; rules under revision
Oklahoma	Board of Nurse Registration and Nursing Education 2915 Classen Blvd. Suite 524 Oklahoma City, Oklahoma 73106 (405) 525-2076	Biennial June 30 even year	$55	$55	$40	Included in application fee	90 days, only for nurses seeking endorsement	no limit for NCLEX	none
Oregon	Board of Nursing 10455 S.W. Canyon Rd., Suite 200 Beaverton, OR 97005 (503) 644-2767	Biennial Birthdate	$65 ($20 late exam fee)	$45	$35 (RN) Late $42 $50 (NP) Late $60	$10	working new graduate only, pending results of first exam	no limit	1500 hrs. of practice immediately preceding renewal plus 100 clock hours of continuing education or Q.A. as req.

TECHNIQUE FOR THE LABORATORY METHOD IN NURSING

Table 1. Technique for the laboratory method

Teacher responsibilities	Student responsibilities
1. Specify behaviorally defined objectives for laboratory experience and make them known to students.	1. Study necessary background material in accord with outlined objectives.
2. Outline general plan of activities in accord with student and teacher objectives; provide for correlation of activities with theory courses.	2. Formulate own objectives for pursuing assignments.
3. Arrange for needed facilities in advance—*know* patients and be generally knowledgeable in projected area of study.	3. Outline plan of investigation, using own objectives, teacher objectives, background knowledge, and prepared instructions; be prepared to justify plan of action.
4. Provide necessary equipment; check for availability and working condition.	4. Pursue plan of action in self-directed manner, using teacher as resource for guidance in completing plan.
5. Prepare instructions—may be verbal, written, taped, or in manual form—but avoid great detail in order to provide for creative thinking.	5. Make needs known to teacher; seek assistance in validation of data.
6. Plan for sequential learning experiences; allow progression according to individual abilities.	6. Seek additional theoretical information by reading and further study in order to understand and work through presenting problem.
7. Supervise students through use of questions and example; timing of guidance needs to be strategically planned—know when to act, when to withhold action.	7. Validate actions with classmates, nursing service personnel, and other health team members.
8. Provide reinforcement at regular intervals; keep records of daily progress.	8. Summarize data frequently to keep goals clearly in focus.
9. Make self available for group or individual help in validating student actions.	9. Report findings to group, reviewing problem, plan of action, significant data, findings, conclusions, and recommendations.
10. Summarize results through discussions and individual conferences in terms of data collection, organization of findings, methods of solving problems, common problems encountered, individual accomplishments, and implications for use in solving other nursing problems.	10. Evaluate self regarding progress made, areas of strengths and weaknesses, and needed areas of help to ensure future growth. (Use originally established objectives as means of self-evaluation.)
11. Report results of progress to individual students and use information as basis for planning future learning experiences.	

Montana Health Care Licensed Professionals as of January, 1991 *

LICENSED HEALTH CARE PROFESSIONAL	CME REQUIRED?	# OF CURRENT PROFESSIONALS
MEDICAL EXAMINERS	NO	2724
DENTISTRY	YES	1160
PHARMACISTS	YES	1111
NURSING	NO	12,650
NURSING HOME ADMINISTRATORS	YES	208
OPTOMETRY	YES	255
PHYSICAL THERAPY	YES	377
CHIROPRACTIC	YES	290
RADIOLOGIC TECHNOLOGISTS	NO	902
SPEECH-LANGUAGE PATHOLOGISTS AND AUDIOLOGISTS	YES	268
PSYCHOLOGISTS	YES	172
PHYSICIAN ASSISTANTS-CERTIFIED	YES	N/A
RESPIRATORY CARE PRACTITIONERS	YES	N/A
OCCUPATIONAL THERAPISTS	NO	131
SOCIAL WORKERS	YES	174

* This information has not been updated since January, 1991.

RESEARCH PLAN

I. OBJECTIVES

The major goal of the proposal is to make the health sciences information already available at Montana State University, the Montana State Library, Hospital Libraries, the Regional Health Sciences Library and the National Library of Medicine more accessible to health providers, health educators and medical and biomedical researchers. The availability of health information delivered in an expeditious and economical way will increase the quality of patient care, stimulate continued learning, improve the quality of education and promote basic and applied research in biomedicine. This goal will be accomplished through an organized plan for consolidation of existing resources, implementation of rapid means of communication and delivery of information and education of providers on system utilization.

The Health Sciences Library at Montana State University will function as the centralized resource in Montana for health information storage and delivery. This goal is consistent with the mission of Montana State University as a multi-purpose institution serving Montana in the areas of teaching, research and service.

A. Specific Objectives

1. Objective 1.

To designate the current Health Sciences Library at Montana State University as the Montana Health Sciences Library and the centralized coordinating center for the health information network.

2. Objective 2.

To appoint and organize an Executive Committee to work directly with the Principal Investigator and the Project Coordinator of the Montana Health Sciences Library Network (MHSLN).

3. Objective 3.

To appoint and organize an Advisory Board which is representative of the various health providers, health consumers, health educators and health librarians to work with the MHSLN Executive Committee and the Project Coordinator.

4. Objective 4.

To survey, assess and evaluate the health information needs in Montana.

5. Objective 5.

To establish a telephone "hot-line" to the MHSLN at Montana State University to provide rapid access to all health information by health providers.

6. Objective 6.

To establish a compatible and functional relationship with all of the libraries in the Montana University System of Higher Education and libraries in the public library federation system to facilitate access to information by health professionals, researchers and health educators.

7. Objective 7.

To establish a compatible and functional relationship with existing hospital libraries in Montana for improving access to information and development of an improved educational atmosphere in the environment of the health professional.

8. Objective 8.

To assess the need for development of additional hospital libraries/educational centers where these facilities do not exist.

9. Objective 9.

To establish compatible and functional relationships with the Montana State Library and with County/City Libraries in areas where access to hospital libraries/educational centers is limited.

10. Objective 10.

To meet with health professional groups (physicians, nurses, dentists, veterinarians, medical technologists, hospital administrators, physical therapists, etc.) at their annual meetings to demonstrate and discuss the MHSLN and to encourage these providers and provider organizations to actively support and use available health information services.

11. Objective 11.

To schedule regional workshops at the larger hospitals in Montana to demonstrate and discuss the procedures for access to health information.

12. Objective 12.

To seek the support of hospital administrators in the continued development of educational centers within the hospitals as a part of the MHSLN.

13. Objective 13.

To prepare, disseminate and maintain a current catalog of health science serials and other health information available in Montana.

14. Objective 14.

To prepare and deliver quarterly newsletters to health providers in Montana.

15. Objective 15.

To specifically address the potential of the MHSLN to assist health providers in the attainment of quality continuing education.

16. Objective 16.

To serve as the functional link between the health providers, health educators and biomedical researchers in Montana and the Pacific Northwest Regional Health Science Library and other sources of health information.

17. Objective 17.

To evaluate other systems for delivery of health information and integrate feasible systems into the MHSLN.

18. Objective 18.

To seek Montana legislative support for the MHSLN as a provider service to begin July 1, 1981, with phase in to full support of the network by December 1, 1983.

19. Objective 19.

To develop a State Medical Library Plan in conjunction with the Regional Medical Library Plan.

B. Aims

At the termination of the project a functional network which provides access to, delivery of, and use of health information by health providers, health educators, and biomedical researchers should be achieved. The network would continue to function as a part of the Montana University System, the Montana Library Association, the Montana Hospital Association and many of the participating health professional associations.

II. RATIONALE AND BACKGROUND

A. Rationale

Access to current information is critical to the delivery of quality health care. The health professionals are trained through an educational system which is heavily dependent upon accessibility to information through textbooks, journals and professional health educators. In order to maintain and improve the knowledge and skills of health providers it is essential that the health provider be in a constant state of learning. Isolation from the "learning atmosphere" results in a continuous decline in current knowledge except among the small

EXHIBIT K

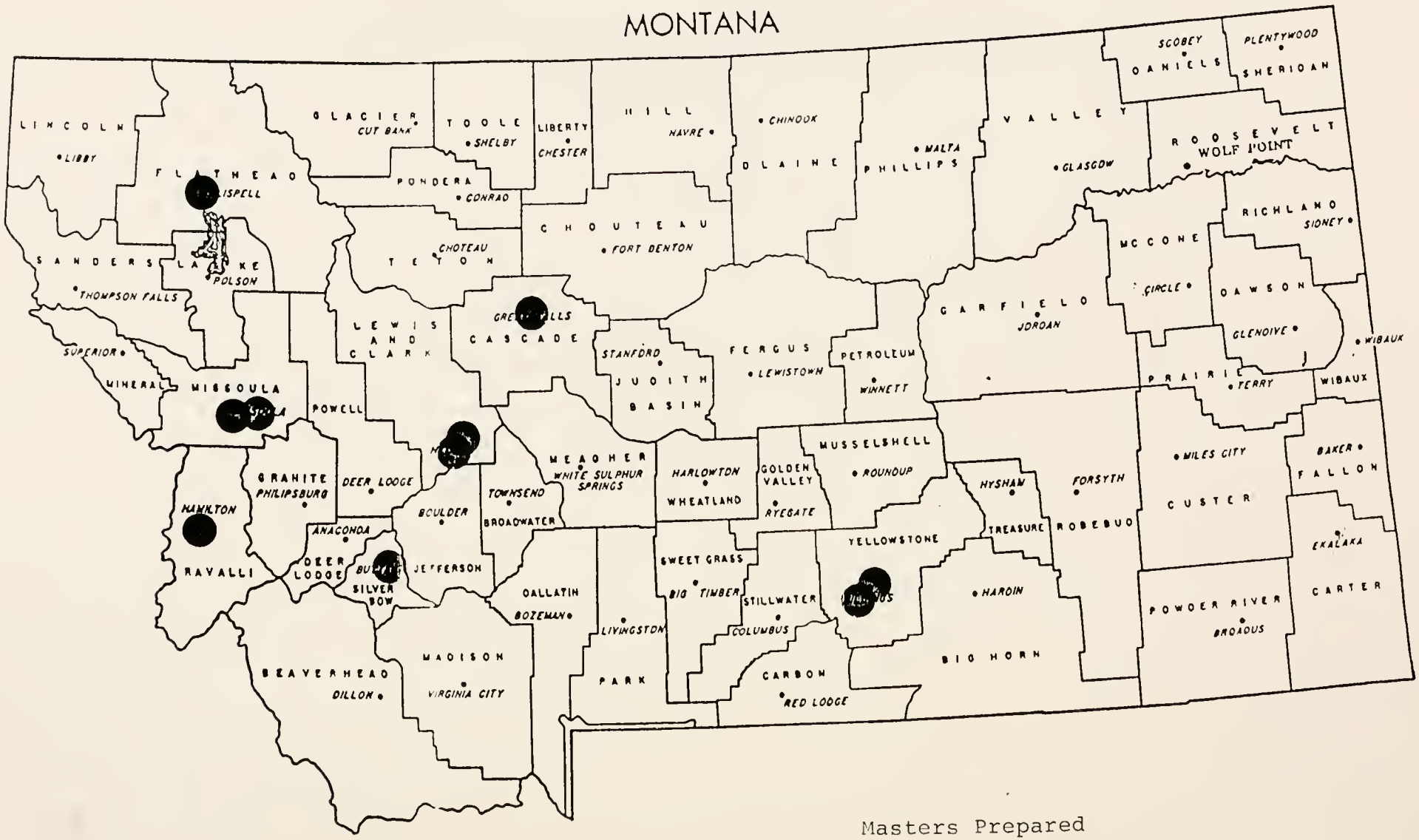
GRATEFUL MED OUTREACH PROJECT FINAL REPORT
MAY, 1992

STATISTICS/ BY PROFESSION

	Attended workshop	Obtained password
Physicians	8	4
Nurses	16	3
Administrators	4	4
Others	31	13

EXHIBIT E

MONTANA

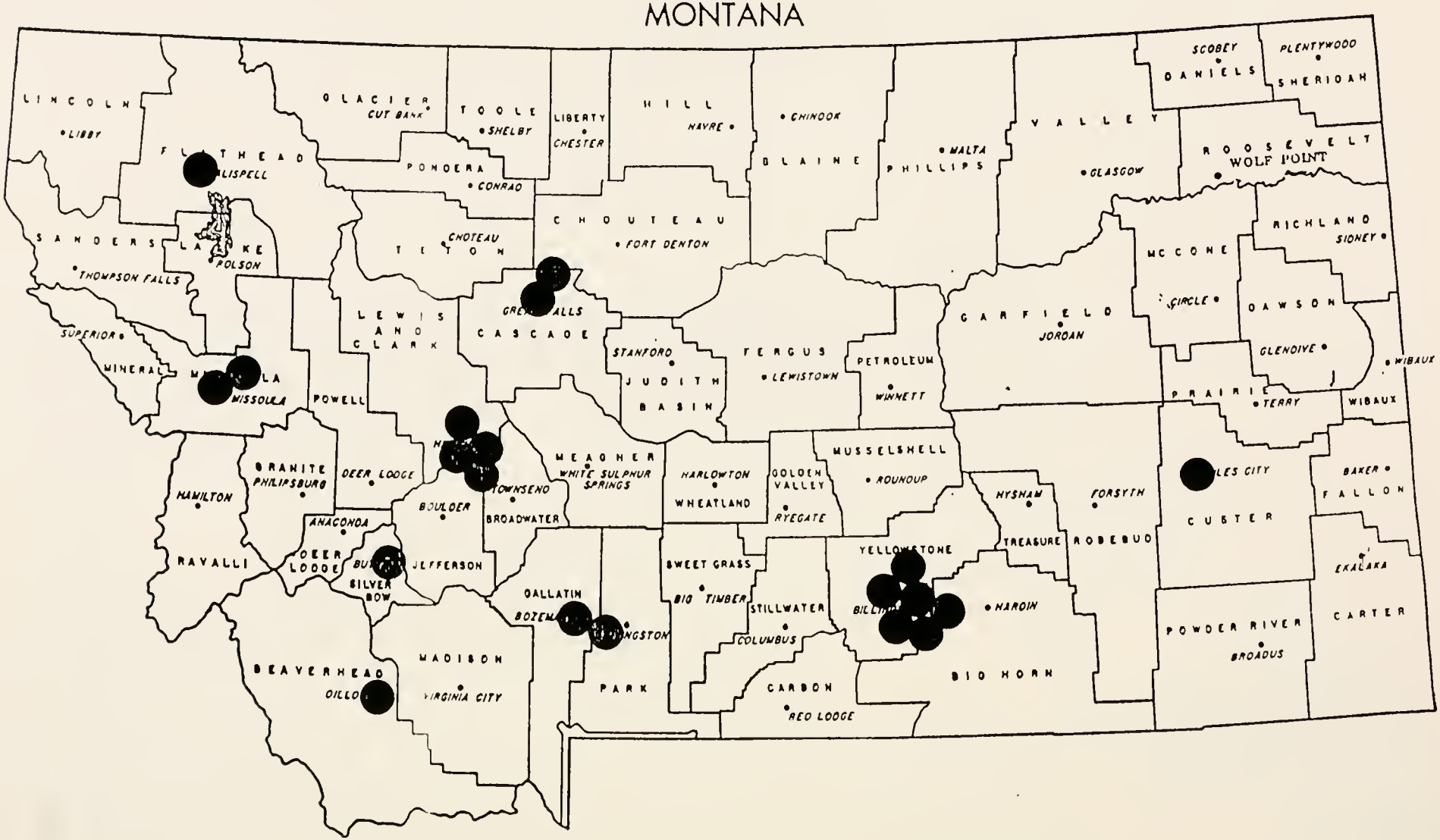


Masters Prepared

Librarians

EXHIBIT M

MONTANA

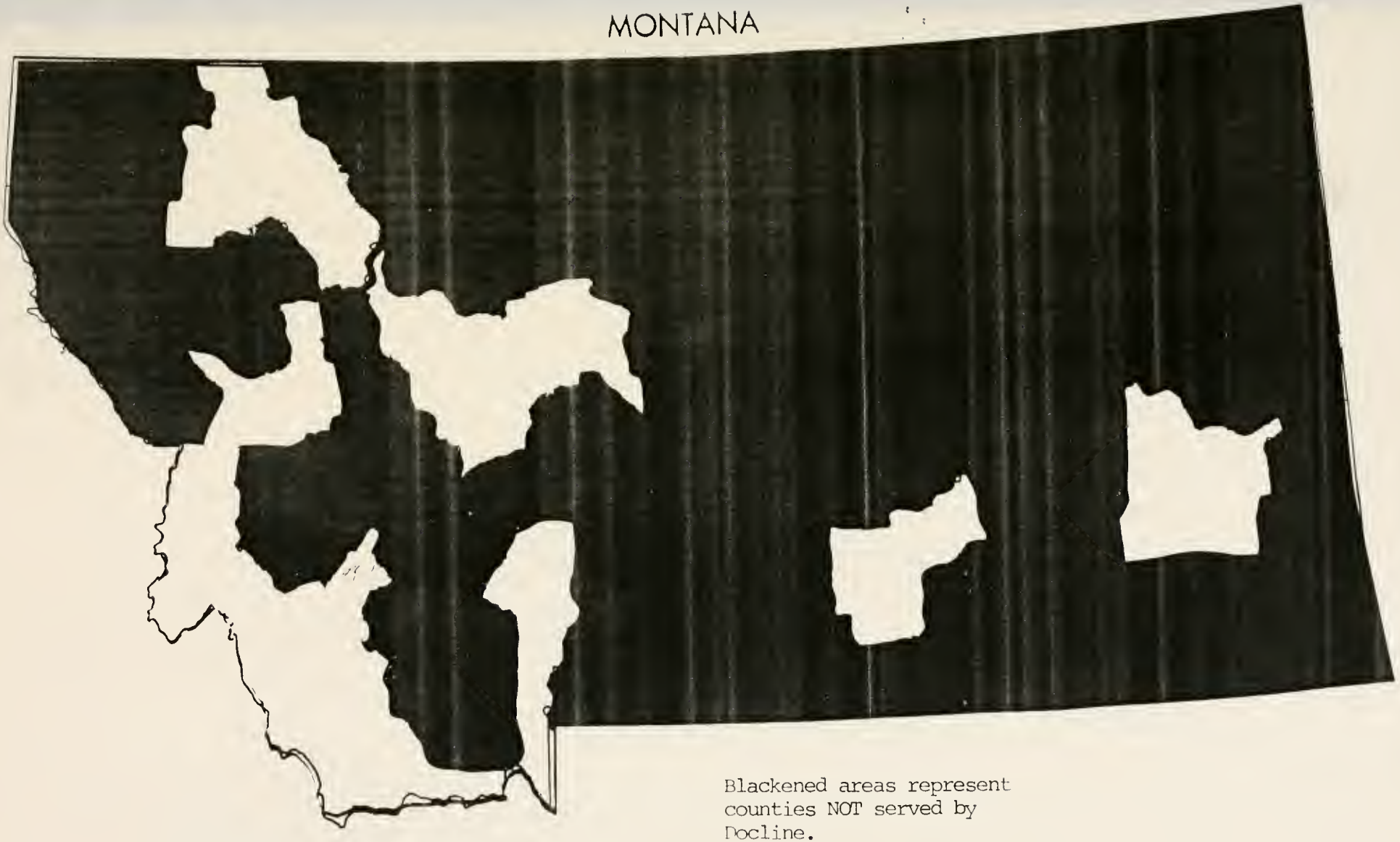


Librarians Willing

To Do Searches For

Other Organizations

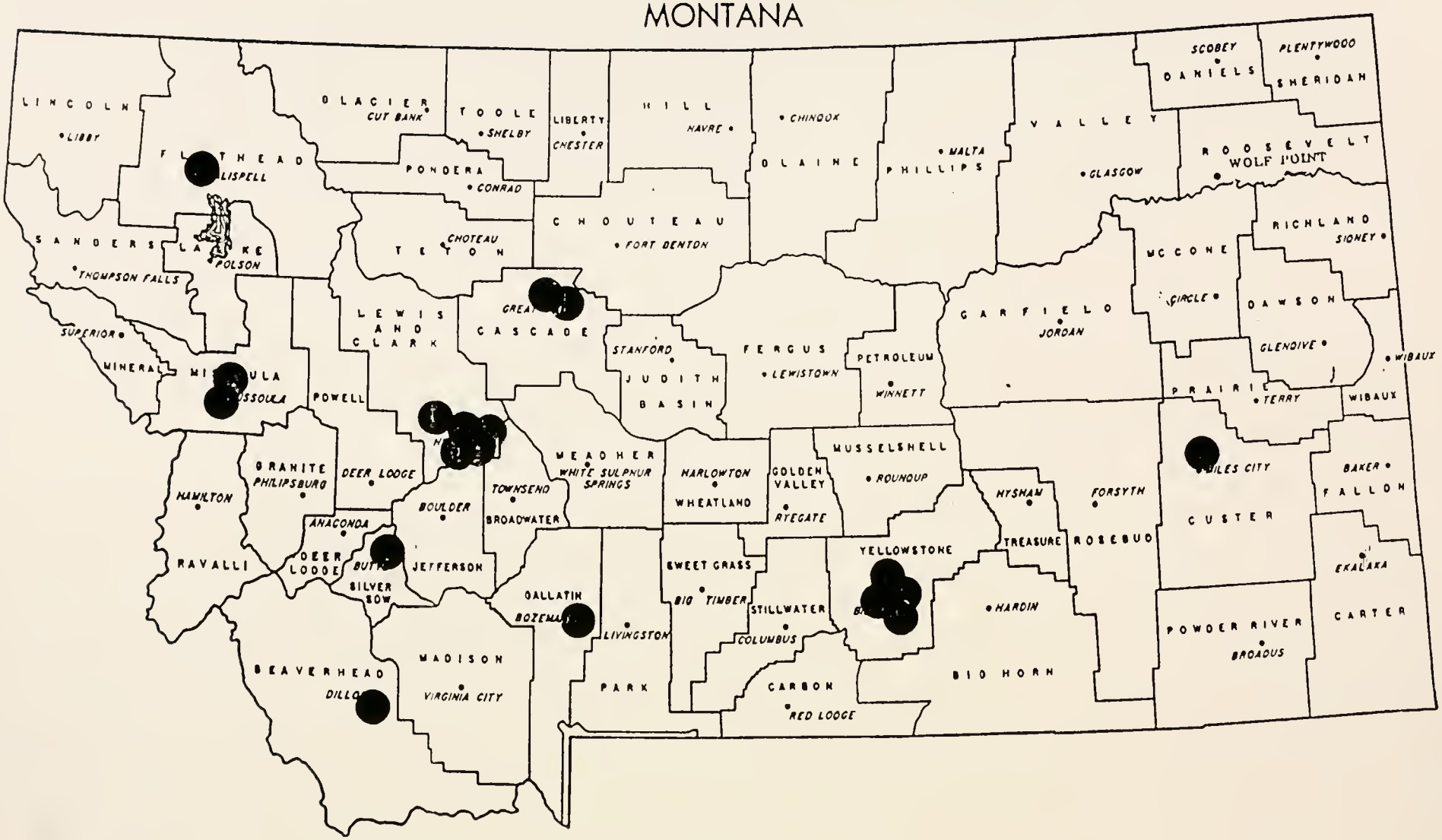
MONTANA



Blackened areas represent counties NOT served by Docline.

EXHIBIT N

MONTANA



Organizations

With Doc Line

EXHIBIT O

CE PRODUCT DESCRIPTION

PRODUCT CHARACTERISTICS

1. Routine literature searches as requested by client.

2. Monthly or quarterly table of contents review of selected journals with articles supplied as requested.

3. On going information provided on specified subject areas as requested.

4. Review client's practice trend data with specific articles provided.

5. Review of client's personal library and make recommendations concerning cataloging, methods of collection, additions and deletions.

RECOMMENDED JOB DUTIES FOR STATE COORDINATOR

A job description for this Medical Information Specialist/Coordinator might read:

1. Coordinates development of information resources which meet current and anticipate future needs of Montana health providers and facilities
    a. identifies topic areas of concern
    b. identifies existing state resources
    c. coordinates appropriate acquistition and storage of new information resources
    d. coordinates statewide access and delivery systems for information resources
    e. assists with statewide project and resource development grants

2. Coordinates existing information services
    a. develops and promotes resource-sharing network
    b. maintains communication among network participants
    c. coordinates delivery of services to unserved practitioners and facilities

3. Advises health science librarians and health care facilities seeking to develop information resources
    a. provides back-up information services
    b. counsels in information resource development and management techniques
    c. counsels in application of new technologies and system

4. Represents health science information providers and users within the state; ie networking with the Montana State Library Commission, MHA, MMA, MNA, AHEC etc.

5. Represents Montana health science information providers and users to the Regional Medical Library Network
    a. serves on the Regional Advisory Council of UWaHS Lib.
    b. coordinates Montana participation in regional activities; ie regional resource sharing, directories, statistical surveys, needs assessment, project development

FUNCTIONS OF STATE MEDICAL LIBRARY COORDINATORS

START UP SMALL HOSPITAL LIBRARIES

ENCOURAGE CONSORTIA OF HOSPITALS AND LIBRARIES

HELP WITH GRANT APPLICATIONS

MONITOR DEVELOPMENTS IN LIBRARIES

ACT AS CENTRALIZED SOURCE OF INFORMATION ON WHAT LIBRARIES ARE DOING, HOLDINGS, CHANGES

ANSWER QUESTIONS, MAKE REFERRALS TO APPROPRIATE INSTITUTIONS

KEEP TRACK OF EQUIPMENT NEEDS AND TYPES IN USE FOR STANDARDIZATION, LINKING

PROMOTE NETWORKING

Exhibit 5

RELEASED: April 24, 1991
CLOSING DATE: May 8, 1991
Applications must be received by IPC by 5:00 p.m. on closing date.

PLEASE POST

AN# 91-02906-0305 DP

STATE OF IDAHO ANNOUNCES

DEPARTMENTAL PROMOTIONAL EXAMINATIONS FOR

LIBRARIAN, HEALTH INFORMATION CONSULTANT*

IDAHO STATE LIBRARY

SALARY RANGE: $1,037.60 - $1,391.20 every two weeks ($12.97 - $17.39 hourly)
EFFECTIVE JUNE 9, 1991, SALARY RANGE WILL BE:
$1,089.60 - $1,460.80 every two weeks ($13.62 - $18.26 hourly)
(Longevity increments not included in salary range.)

ONE OPENING - BOISE - PART-TIME (24 HOURS PER WEEK)

*COMPETITION LIMITED TO CLASSIFIED EMPLOYEES OF IDAHO STATE LIBRARY.

DUTIES: To provide consultation and continuing education for the development and improvement of health information services; develop plan for statewide library health information services; perform related work.

PRINCIPAL ACCOUNTABILITIES: Consultation, technical assistance, and continuing education. Consults with health or institutional staff and librarians to develop, manage, and improve health-information services; assesses information needs; identifies problems and solutions, priorities, and funding sources; evaluates quality of library services; provides technical assistance on: development and writing of grant proposals, management problems and solutions, evaluation of equipment; training and access to computerized data bases in health sciences; developing budgets; library organization, methods and trends in health information services; assessing new technologies applicable to health information; negotiating agreements for sharing material. Assesses educational needs; develops and/or identifies educational programs; conducts workshops or provides individual training sessions; prepares progress and evaluation reports; consults with hospital administrators and librarians, health or institutional professionals, federal program officers and Regional Medical Library, local librarians, library boards and officials. Health information services plan. Develops, implements, and evaluates plan for health information services consistent with library development plan; directs plan implementation and evaluation statewide; participates in developing, implementing, and evaluating statewide plans for library services. Resource sharing projects. Directs and coordinates statewide resource sharing projects; negotiates cooperative sharing agreements; directs collection, compilation and dissemination of statewide union lists of science journals, audiovisuals and monographs; represents special interests and needs of Idaho libraries to Regional Medical Library and negotiates with regional national medical libraries for selected services.

MINIMUM QUALIFICATIONS AND APPLICATION: To be accepted for the examination, you must demonstrate competence in all minimum qualifications listed on the PC-1.A (qualifications statement form) on the reverse side of this announcement. The application forms PC-2 and PC-1.A must be received by the Idaho Personnel Commission no later than 5:00 p.m. on the closing date. Forms can be obtained from the Idaho State Library or the Idaho Personnel Commission, 700 West State St., Boise, Idaho 83720; Telephone: (208) 334-2263.

EXAMINATION: 100% Rating of Education and Experience examination.

GENERAL INFORMATION: A minimum score of 70 is required to place on the register.

THE REGISTER FROM THIS ANNOUNCEMENT WILL REMAIN VALID FOR 12 MONTHS UNLESS SPECIFICALLY SHORTENED OR EXTENDED BY THE STATE PERSONNEL DIRECTOR.

EEO/AA Employer

LIBRARIAN, HEALTH INFORMATION CONSULTANT*

PC-1.A
(TRAEX)

LIBRARIAN, HEALTH INFORMATION CONSULTANT

Qualifications Statement

You must answer the following questions to document your qualifications for this job. All are minimum requirements unless otherwise indicated. The score you receive will be based on a rating of your background. To receive the highest possible score, list all your pertinent education and/or experience relating to the areas below. Resume will not substitute.

1. Use a separate sheet of paper. Answer each item. Be specific.
2. If you show education, list and describe coursework, show dates and location.
3. If you show experience, describe it, show dates and name and phone number of person who can verify it.

Retain a copy of your application and supplemental material for reference and placement interviews.

****

The incumbent in this position consults with health care and institutional professionals, administrators and librarians to provide professional expertise and continuing education for the development and improvement of health information services in Idaho. The incumbent also develops the plan for statewide health information services and directs and coordinates the statewide health science resources among hospital, institutional, public, state, and academic libraries.

1. Statewide travel is required for onsite visits, consultations, and evaluations. Are you willing to travel?

2. Explain how your education, experience, and training have provided you with considerable knowledge of:
   a. trends and current technology in health science libraries;
   b. specialized health information data bases, resources, and networks.

3. Describe your education, experience, and training that demonstrate you have good knowledge of:
   a. library management, organization, and procedures;
   b. trends of library development.

4. Tell how your background has provided you with some knowledge of grants administration.

5. Describe your experience evaluating services, programs, plans and grant applications. Indicate the various planning and development projects with which you have been involved.

6. Describe your experience planning and presenting continuing education workshops.

7. Describe your experience selecting, organizing, and managing health science library materials.

8. Describe your experience negotiating and mediating problems and conflicts. Give examples of types of problems and conflicts and describe your role in resolving these problems or conflicts.

4/91
TRAEX

Once your application is accepted for examination, no additional information will be accepted. Be sure to provide complete information at this time.

Considerable knowledge means that degree of knowledge and experience that would allow one to perform all but a very limited number of job tasks that might arise. It is the degree of knowledge needed to solve all but the most intricate or complex problems in the field.
Comprehensive knowledge means that degree of knowledge gained through broad and intensive experience in all major aspects of the subject area. This level would qualify a person as a recognized expert in the field.

Employee: Nancy Van Dinter Date:
PCN: 6510

MAJOR RESPONSIBILITIES based on class description:

1. Consulting and CE. Consult with hospital medical staff, librarians, and others who provide health information to develop, manage, and improve health information services. Assist client libraries in developing grant projects. Identify needs for consulting and continuing education and provide or coordinate activities to meet those needs. Consult with staff of other special libraries as appropriate. Work with the CE consultant to coordinate specific CE activities.

2. Statewide network. Develop, implement, and evaluate plans to improve health information services in the state. Direct the annual production of the union list of health science journals. Act as liaison for the state with the Pacific Northwest Regional Health Science Library Service.

3. LSCA. Consult with librarians on formulation of new and assessment of current LSCA grant projects. Review and evaluate cooperative grant applications. Work with the grants officer to monitor projects.

4. LD Division work. Participate with the rest of the Division in developing long term goals and priorities, identifying potential new programs, and evaluating existing programs. Maintain communications with other members of the Division. Work with other Division members in areas where responsibilities overlap.

Comments.

Exhibit 5

A job description for this Medical Information Specialist/ Coordinator might read:

1. Coordinates development of information resources which meet current and anticipate future needs of Montana health providers and facilities
   a. identifies topic areas of concern
   b. identifies existing state resources
   c. coordinates appropriate acquistition and storage of new information resources
   d. coordinates statewide access and delivery systems for information resources
   e. assists with statewide project and resource development grants

2. Coordinates existing information services
   a. develops and promotes resource-sharing network
   b. maintains communication among network participants
   c. coordinates delivery of services to unserved practitioners and facilities

3. Advises health science librarians and health care facilities seeking to develop information resources
   a. provides back-up information services
   b. counsels in information resource development and management techniques
   c. counsels in application of new technologies and system

4. Represents health science information providers and users within the state; ie networking with the Montana State Library Commission, MHA, MMA, MNA, AHEC etc.

5. Represents Montana health science information providers and users to the Regional Medical Library Network
   a. serves on the Regional Advisory Council of UWaHS Lib
   b. coordinates Montana participation in regional activities; ie regional resource sharing, directories, statistical surveys, needs assessment, project development

EXHIBIT Q

DRAFT 2/28/92

National Network of Libraries of Medicine (NN/LM)
Pacific Northwest Region
(Region 6)

BASIC INFORMATION SERVICES

Each health professional should have access to information, in any format, which may be pertinent to his or her educational, clinical, research, or administrative needs. To identify, obtain, and evaluate this information, each professional, regardless of location, should have:

A. Access to databases and databanks (one or more of the following)
- Personal: Internet, GMED, CD-ROM's, or others
- Institutional: Librarian-mediated
- Contractual: by arrangement with librarian, professional society, etc.
- Referred: Expert sources

B. Access to documents from local and distant collections
- Immediate: Electronic access to available text, graphics, data
- Personal: Private collections
- Local: Libraries in affiliated institutions
- Distant: Interlibrary loan

C. Access to human resources
- Health provider colleagues via bulletin boards, teleconferencing, etc.
- Information professionals
  - Training in personal access to A-C above
  - Intervention/mediated access to A-C above
  - Evaluation and consultation on information management